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Economical Aluminum Can p. 58
Plant With Innovations p. 66

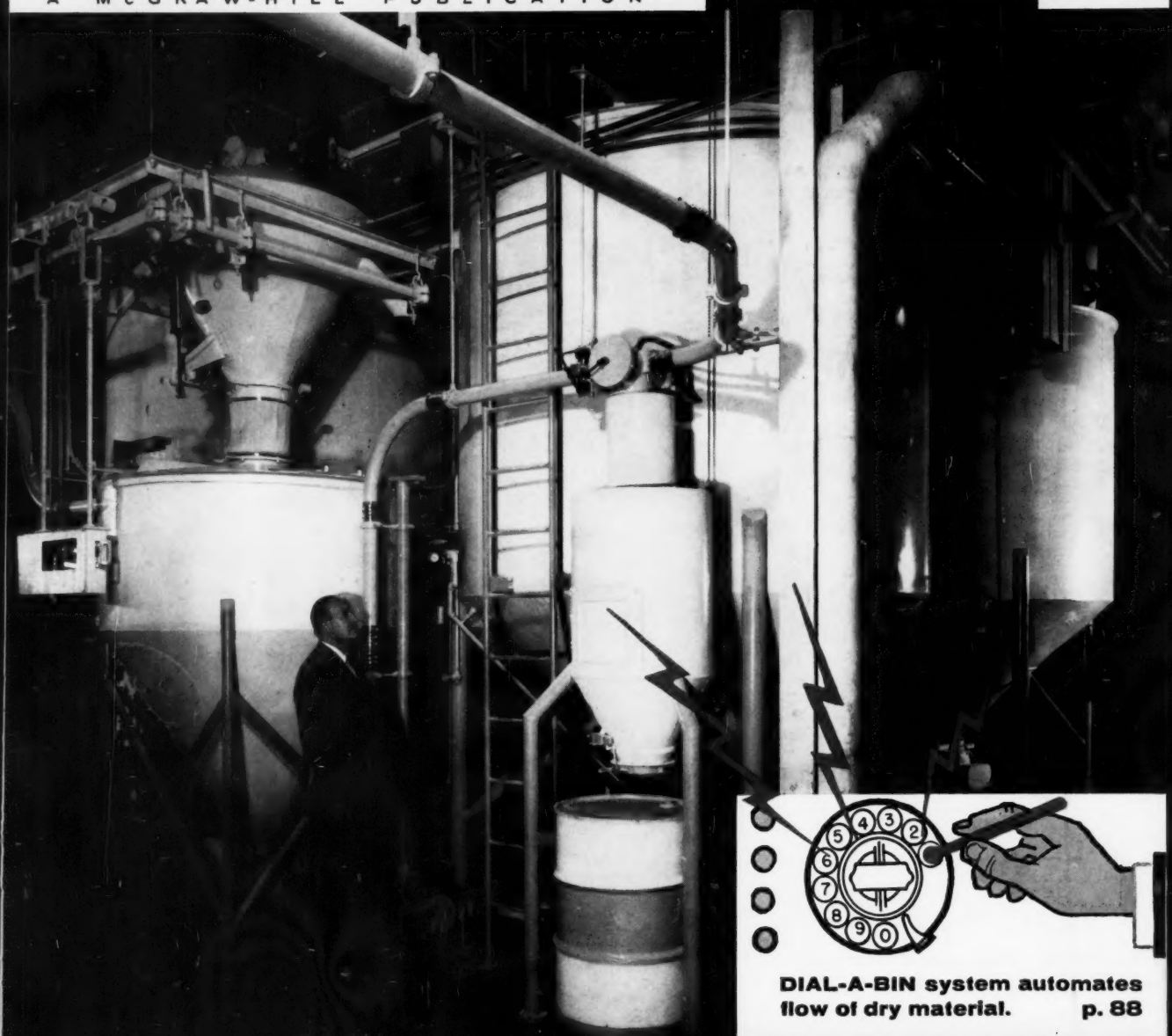
FEBRUARY 1959

$1.00

FOOD ENGINEERING

FOR MANAGEMENT
IN MANUFACTURING,
PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION



DIAL-A-BIN system automates flow of dry material. p. 88

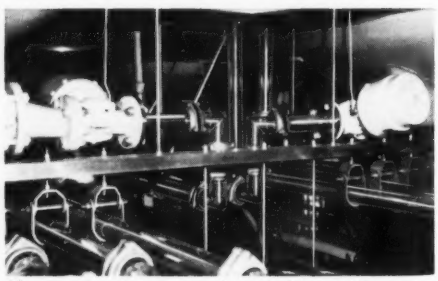
Glass-lined tanks, lower sections of which can be seen in photo above, stockpile liquor. Glass-lined Grinnell-Saunders Diaphragm Valves, with power operators, regulate the flow of liquor from tanks to glass-lined pipe leading to selector ring, where it is conveyed to the bottling machine.

Providing positive control of liquids for the Liquor Control Board of Ontario

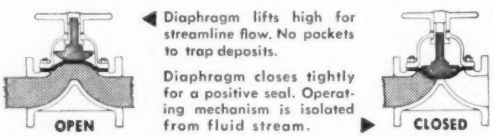
Proper liquor blending, filtering, conveying and bottling are important at the Liquor Control Board of Ontario in Toronto... but overriding all else is the need for protecting product purity. Grinnell-Saunders Diaphragm Valves were installed to provide not only positive fluid control, but this vital product protection as well.

Because of the design of the valve, there is no chance of contamination due to the product coming in contact with the valve mechanism or lubricant. There are no pockets in which the product can collect. When properly installed, Grinnell-Saunders valves are self-draining. Maintenance is no problem, either. The only part of the valve normally subject to wear is the diaphragm. This can easily be replaced without removing the valve body from the line.

Grinnell-Saunders Diaphragm Valves can be supplied with handwheel or power operation, also with lever operation in small sizes. They are available with a variety of body sizes as well as body, lining and diaphragm materials to meet a wide range of services. For details, write Grinnell Company, Inc., Providence 1, R. I.



Close-up view showing stainless steel Grinnell-Saunders Diaphragm Valves mounted 15° from the horizontal for easy self-draining. After a run, tanks and valves are readily cleaned and flushed with the usual solutions.



◀ Diaphragm lifts high for streamline flow. No pockets to trap deposits.

Diaphragm closes tightly for a positive seal. Operating mechanism is isolated from fluid stream. ▶

GRINNELL-SAUNDERS DIAPHRAGM VALVES

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

For more data, circle 246 on Reader Service Card

FOOD ENGINEERING FOR MANAGEMENT

FEBRUARY, 1959

30th YEAR

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ANNUAL EDITORIAL INDEX OF FOOD ENGINEERING's 1958 issues is available at 35¢ a copy. Order on Reader Service Card.

Announcement is made that

van Ameringen-Haebler, Inc. of New York and Polak & Schwarz N. V. of Zaandam, Holland

have combined their interests and will operate as divisions of a New York parent company to be known as

International Flavors & Fragrances Inc.

The identities of these two long-established firms will be retained and each will continue to serve its customers in the same manner as in the past.

By operating in conjunction with each other, they will have development, manufacturing and distributional facilities in fifteen countries, through wholly-owned subsidiaries in North and South America, Europe, the United Kingdom and South Africa.

As a result both firms will be able to supply their products and services on a greatly expanded and more effective basis.

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A Division of International Flavors & Fragrances Inc.
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New York 19, N. Y.

Polak & Schwarz Internationaal N.V.
A Division of International Flavors & Fragrances Inc.
Zaandam
Holland

Creators and Manufacturers of Flavors, Fragrances and Aromatic Chemicals

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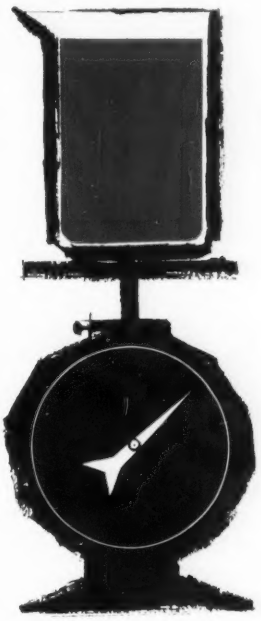
more pounds per gallon



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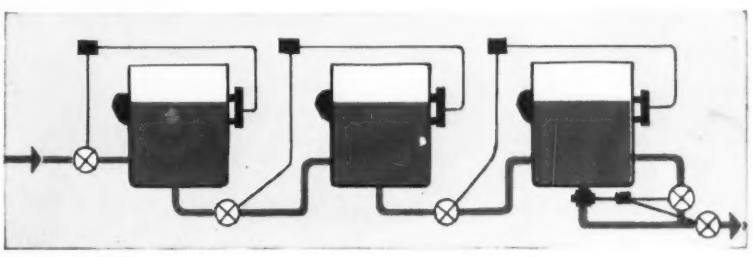

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Although this machine was originally designed for grading whole green and cut beans, it is ideally suited for sliver elimination of French-cut potatoes, and similar diced or sliced products.

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TRENDS & FORECASTS

SPECIAL

FOOD ENGINEERING

SERVICE to EXECUTIVES

Gain of 7% in business this year, for total volume of $468 billion, is forecast by McGraw-Hill's Dept. of Economics. By end of '59, volume is expected to hit an annual rate of more than $475 billion.

One-third of potential purchases of consumer durables is "optional consumption," so effective marketing could divert more dollars to food.

Mass market for expensive products is expected to increase steadily. Population in this group will reach 48 million by '70, up 25% over '56. Income for group is forecast at $9,300 per family in '70, up 30%.

Common Market in Europe eventually is expected to create a mass market such as Europe has never seen. Companies with plants on Continent will have great advantage in tapping this new business.

Baby food sales in Britain have multiplied 2,000 times in four years, and '58 pack is estimated at 200 million containers. Another indicator of potential for American-type foods in revitalized Europe.

Per capita consumption of meat will reach 156 lb. this year, up 4 lb. over '58, American Meat Institute forecasts. Most of increase will be in pork. Beef, veal, and lamb supplies will remain at about 1958 levels.

Pack of canned tomato juice in '58 increased 14.5% to 32.6 million cases; output of tomato sauce jumped 60% to 11 million cases; but tomato puree was down 2% to 3.4 million cases.

Production of canned green beans last year rose 5.4% to 25.3 million cases; canned wax beans dropped 33% to 2.8 million cases. Output of canned pumpkin and squash was 4% higher, or 3 million cases.

Baby food sales reached record $300 million in '58 and will continue to increase. Infants born last year totaled 4,248,000.

Confectionery sales exceeded 3 billion lb. and $1 billion (at manufacturing level) in '58, according to National Confectioners Assn.

Exports of frozen poultry, principally ready-to-cook broilers, jumped 20% in '58 to 30 million lb. Similar increase is anticipated for '59.

Volume of cocoa beans processed in U.S. in last quarter of '58 was 14% below '57, or 121.3 million lb. Total for '58 was off 10.9%.

California strawberry production last year was down 10% to 225 million lb. Production likely will be still lower in '59.

Consumption of beer and ale in the first 10 months of '58 was down ½%, compared to '57, to 71.9 million barrels. Packaged beer accounts for about 80% of sales, U.S. Brewers Foundation reports.

Price of coffee dropped to World War II levels in latter part of '58, and consumption gained 3.8% during year.

See Developments to Watch p. 13

Production of ice cream was up 2% for first 11 months of '58, to 620 million gal. Cheese output was nominally lower, or 1.3 billion lb. Creamery butter was down 2% to 1.28 billion lb., USDA reports.

Production of winter vegetables is expected to be 12% larger than last year.

NOW . . . "custom plan" your conveyor system with Standard

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and Standard units for complete belt, "live" roller and gravity roller set-ups

Handidrive conveyors are made up of pre-engineered standardized units, such as drives, take-up units, end roller assemblies, intermediate framework, supports and hangers.

Easy to engineer and install . . . at low cost

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Handidrive may be mounted at center or end. Standardized units may be purchased individually for extension to present conveyors, or as complete conveyors.

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Send for Handidrive Bulletin No. 64. Write Dept. D-2.

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OVER 50 years of conveyor experience

GRAVITY & POWER CONVEYORS

Sales and Service in Principal Cities

Schedule of Events

February

20-23—National Canners Assn. and Canning Machinery & Supplies Assn., joint annual convention & exposition; Conrad Hilton Hotel, Chicago.

March

1- 5—National Assn. of Frozen Food Packers, annual convention and machinery & supplies exposition; Conrad Hilton Hotel, Chicago.

2- 5—American Society of Bakery Engineers, annual meeting; Edgewater Beach Hotel, Chicago.

31-A2—Food & Container Assn., Research & Development Assoc., annual meeting; Hotel Statler, Wash. D. C.

April

13-17—National Packaging Assn., annual packaging exhibit; International Amphitheater, Chicago.

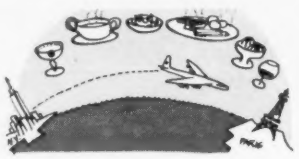
16-19—National Independent Meat Packers Assn., annual meeting; Palmer House, Chicago.

20-22—American Oil Chemists' Society, annual spring meeting; Roosevelt Hotel, New Orleans.

23-24—Pennsylvania Mfg. Confectioners' Assn., annual production conference; Franklin & Marshall College, Lancaster, Pa.

HORS D'OEUVRES

▶ The Martini was invented as the Martinez, at the old Occidental Bar in San Francisco, in the early 1860's. Thought you'd like to know the entire history of your hangover.



▶ You get a choice of two dozen gourmet dishes on the new Pan Am jet flights to London, Paris, and Rome. It's not only possible, but a pleasure, to eat 1,000 miles of food at a sitting.

▶ American Medical Assn. says that vitamin pills are not necessary for normal persons who eat an adequate diet. Now you know how mankind was able to survive until synthetic health was invented.

▶ Sixty-three percent of babies leaving U. S. hospitals are formula fed, compared to 35% ten years ago. Surely this trend can't be attributed to better packaging!

▶ On our way to the planets, we'll still be washing dirty dishes. Try that one for perspective.

▶ During the early hours of last New Year's Day, invitations for free coffee were handed to motorists entering a New Jersey toll road. NJ wanted to be sure they'd live to pay tolls another year.

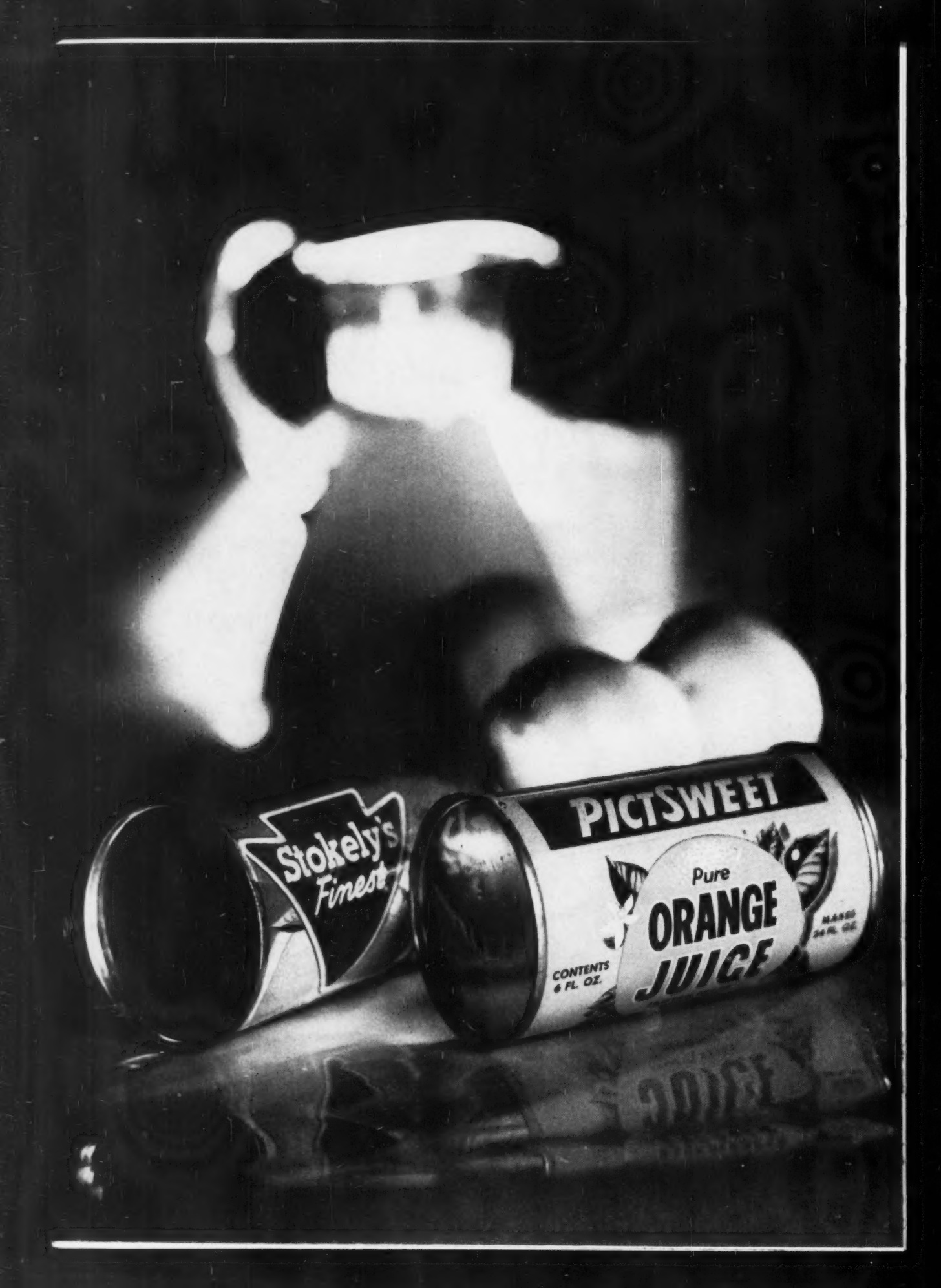
▶ Popcorn acreage was 65% greater last year. The answer to the exploding population problem.

your product belongs

in glass by Brockway

They're never too young to learn . . . that consumer acceptance is something which is best brought home when your product is packaged in attractive glass containers. • Delicious food must *look* good before it can *taste* good . . . and they'll look at it only if they can see it . . . through the flawless clarity of a glass container by Brockway. • A glass container enables the consumer to store the unused portion of the food and to see at a glance how much is left. • A product that is worthy of consumer acceptance deserves a quality glass container by Brockway.

BROCKWAY GLASS
COMPANY, INC., Brockway, Pennsylvania
Sales Offices in Principal Cities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Pure
ORANGE
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Profitable Brands Start With Cherry-Burrell

Refreshing. Cool. Delicious. The fresh flavor of newly picked and just squeezed oranges rates Pictsweet and Stokely's Finest two of the popular, first choice brands. Homemakers can rely on that refreshing flavor. They buy with confidence again and again.

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C-B Aro-Vacs use a steam and vacuum treatment to remove unwanted odors and taints from any liquid. The product is first quickly heated with purified, dry, unsaturated steam. The heat volatilizes unwanted materials and they are drawn off as vapor from chamber top. Then the product enters a vacuum chamber where condensed steam flashes into vapor and is pumped away with other gaseous off-flavors.

The instantaneous heating and cooling eliminates any heat damage. Doesn't change the natural flavor.

A Cherry-Burrell Sales Engineer will be glad to show you how an Aro-Vac Flavorizer will improve your product's flavor. Keep it uniformly good. And selling consistently. There's no obligation whatsoever. Call or write him today.

Sales and Service in 58 cities

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CORPORATION
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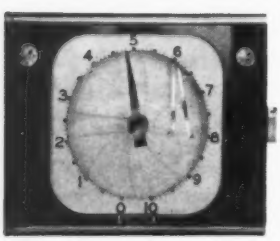
Bristol's 7-point coast-to-coast field service

Helps you from the time you start thinking instruments – through installation – for as long as the job requires



A Bristol Field Engineer is the man to call when you first start thinking about instrumentation. Located in a nearby Bristol office (they blanket the U.S. and Canada) he calls at your plant to assist you in planning your proposed installation. No obligation.

Application Engineers, specialists in the abilities and limitations of every type of instrument, and Process Specialists, experts in instrumentation techniques in varied fields can be called in where necessary. They insure you the right instrument, installation and operation for your specific job.

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BRISTOL TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

For more data, circle 253 on Reader Service Card

DEVELOPMENTS TO WATCH

SPECIAL FOOD ENGINEERING SERVICE to EXECUTIVES

Draught-flavor beer in cans is achieved by eliminating pasteurization at Coors brewery. Beer gets bacterial filtration. Cans and closures are pre-sterilized. Filling room air is electrostatically purified.

Experimental plant for processing acerola, cherry-like fruit very rich in vitamin C, is being constructed by Hawaiian Acerola Co.

Continuous pilot plant for separating gluten and starch from wheat flour by "batter process" has been successfully operated by USDA researchers at Peoria, Ill., lab. Gluten recovery is over 80%; its purity, 80%.

Food manufacturer making own cans uses infrared spectrophotometer to analyze and control quality of can enamel. Instrument also is used to identify wide range of food product components.

Tentative plans to study in-stream analysis in food processing, and to develop research to speed progress, have been made by Food Division of Instrument Society of America, headed by Dr. Roy E. Morse, Rutgers.

Pre-engineered, do-it-yourself roller and belt conveyor components that may be assembled by unskilled workers and tailored to plant requirements are development of Alvey-Ferguson. Drives are included.

Innovation in dryers moves mass of solid particles in thin layer between two parallel wire-mesh belts in recirculating cycle as hot air is blown through product. S. Blickman unit handles wide range of particle sizes.

Trucks are washed in 7 min. by one man with spray system suspended from ceiling. Spray unit encircles vehicle as it is lowered and raised three times to wash with water, wax-enriched detergent, and rinse water.

Distribution is simplified by using truck body as warehouse that is spotted by tractor-trailer for pickup by delivery truck. Raised hydraulically, body stands on legs as truck pulls away.

New low-cost system of punched-card data processing for small business handles production and inventory control, payrolls, accounts receivable, and sales analysis. Speed of Remington Rand unit is 60 cards per min.

Big saving in supermarket labor is effected by displaying packages in trays formed by cutting off bottom portion of shipping case, or removing it by tear strip, so that it contains one layer of packages.

Bundling two or more package units with cellophane to reduce shipping cost and aid inventory control is under study in candy field.

Hinged spout for aerosol cans of toppings and foam products can be cleaned conveniently after each use by washing under faucet.

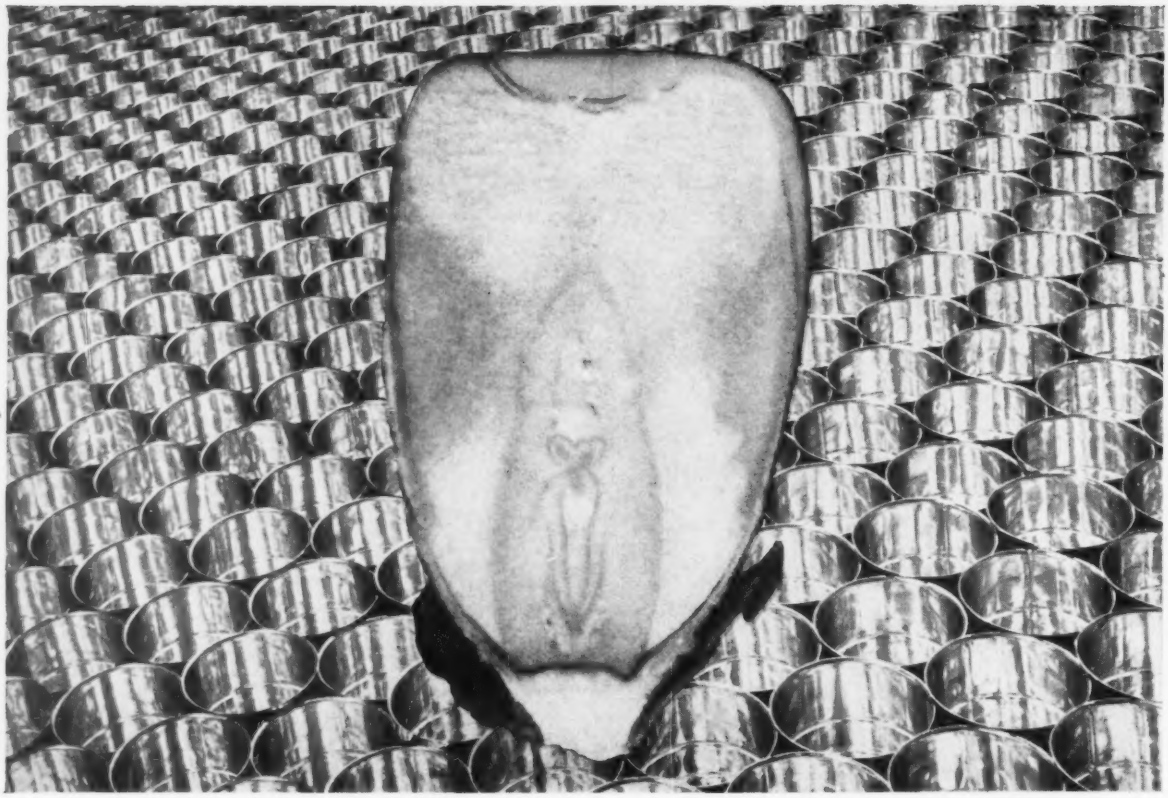
See Washington Report p. 19

Aluminum foil shell is used by freezers for packing deviled crab. It eliminates cleaning, sanitizing of natural shells. Kaiser makes it.

New cellophane transmits moisture but is heat-sealable. Du Pont development is used for bakery items that get soggy in impermeable wrap.

Canned chicken hash, to be served hot or cold, has been introduced by Marnat Packing Co. It is result of three-year research project.

SPECIAL STARCHES



for Special Effects in Canned Foods

Special Starches from National simply stabilize or thicken. Nothing else! As stabilizers they never cloud color, never mask flavor. As thickeners they maintain viscosity characteristics even after extended storage. The result is these six special effects:

- Full Natural Color
- Full Flavor
- Smooth Creamy Flow
- Uniform Viscosity
- Shelf Life Stability
- Breakdown Resistance

These unusual starches are refined from corn, amioca or tapioca. They improve canned foods that range from soup to dessert. We'd like to show you how. Just write, including a description of your product or problem.

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STARCH PRODUCTS INC.

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B.F.Goodrich

Photo courtesy Farwest Fishermen, Inc., Anacortes, Wash

This belt cleans easily, resists oil, is easy on the eyes

B. F. Goodrich Highseal belt cuts maintenance costs, lasts longer

Problem: At the peak of the season, those women inspect up to 35,000 pounds of salmon an hour. An ordinary rubber belt was first used on this line, but fish oils soaked in, darkened the belt, left a fishy odor. No amount of cleaning could get out the smell, and the dark color made inspection difficult.

What was done: Then a B.F.Goodrich distributor recommended an improved conveyor belt, developed by B.F.Goodrich for handling foods where oil and grease is a problem. A special rubber compound gives the Highseal belt good resistance to most greases, fats and alkalies, moisture and food acids. It is light green in color, a shade selected by color experts as being easiest on the eyes for inspection service. It can take temperatures down to zero, up to 212 degrees.

Savings: After three seasons, the Highseal belt has not shown the slightest amount of wear. The plant engineer also reports that the new belt holds lacing better, so there's less down time and maintenance is no longer a problem. Employees who work over the green belt find their job easier, more pleasant.

Extra benefits: Since food can't grind into its smooth, polished surface, this belt can be wiped clean with a damp cloth—no scrubbing or scouring needed. And because it is odorless, tasteless, non-toxic, there's no danger of the belt contaminating food.

Where to buy: Your B.F.Goodrich distributor has full information on this belt and can tell you about its many other advantages for food-handling operations. *B.F.Goodrich Industrial Products Company, Department M-524, Akron 18, Ohio.*

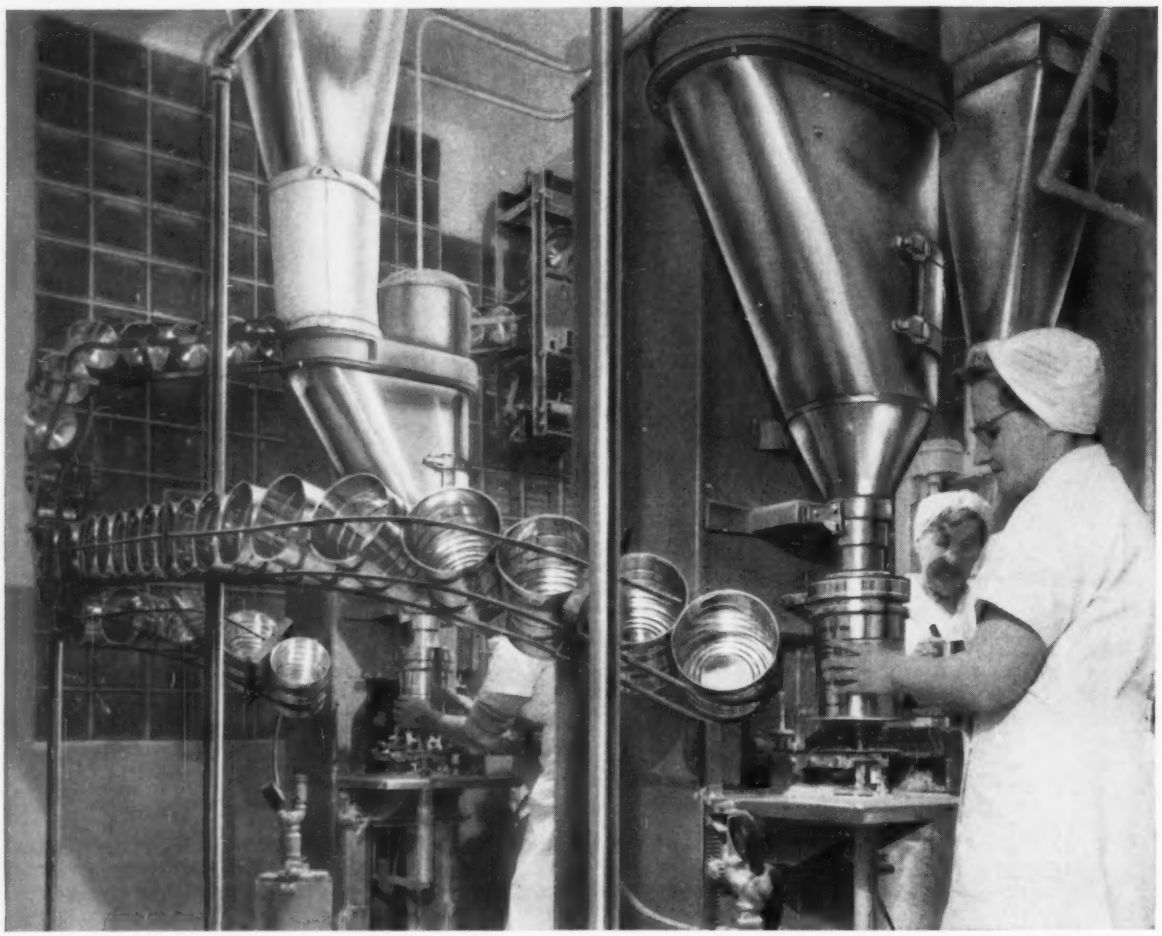
B.F.Goodrich *conveyor belts*

For more data, circle 255 on Reader Service Card

IN FOOD PACKAGING MACHINERY...

REPUBLIC STAINLESS STEEL

Protects Flavor, Provides Easier Cleaning, Promotes Sanitation



SANITATION is imperative in the packaging of powdered food products. Product-contacting parts of stainless steel in these S&S Fillers, manufactured by the Stokes and Smith Plant of Food Machinery and Chemical Corporation, assure sanitation and protect the quality and true flavor of the product being packaged.

Food packaging machinery manufacturers, such as Stokes and Smith, have found Republic ENDURO® Stainless Steel the ideal material for use in building dependable, rugged, well-designed, and versatile equipment.

Why stainless steel? Because it is noncontaminating. Stainless never adds unwanted flavor. Never takes anything away from the flavor you are striving to achieve.

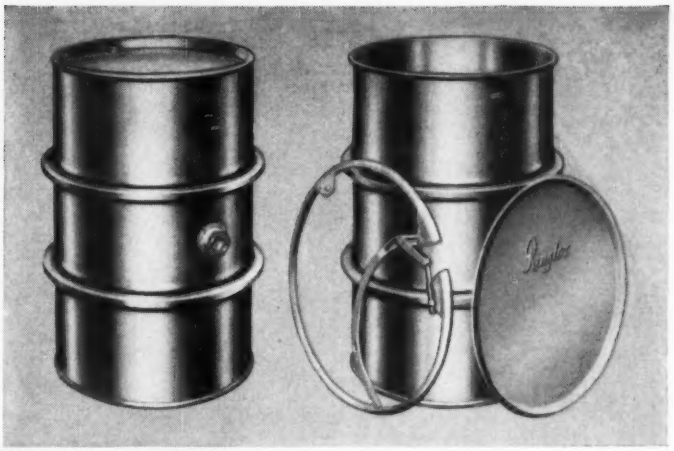
Still another reason is stainless steel's high degree of bacterial cleanability. University of Michigan radioisotope tests on bacteria removal from worn or scratched surfaces proved stainless steel to have the *highest cleanability*—equal to china and glass. Also, worn stainless surfaces had the same *high cleanability* as new stainless surfaces. On unworn surfaces, stainless steel equaled china and glass, but was superior to plastic and aluminum.

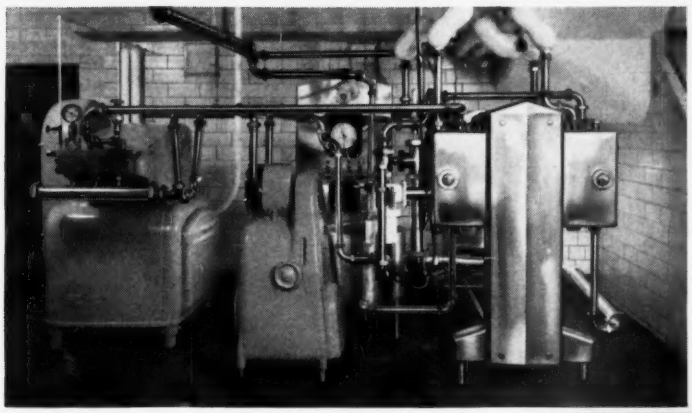
The use of stainless steel in any food processing operation means less cleaning time, less down time, less maintenance, more extended equipment life, lower costs.

Safeguard the quality and purity of your products by using equipment and machinery fabricated from Republic ENDURO Stainless Steel. Your supplier has all the facts. Or send us the coupon for more information.

This example of the advantages of stainless steel is brought to you by Republic Steel in behalf of the stainless steel equipment manufacturers and the Republic Stainless Steel Distributors—your local steel service centers.

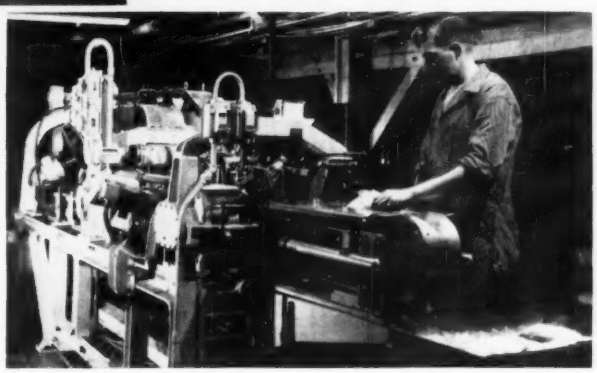
PROTECT YOUR PACKAGE GOODS AGAINST CORROSION and contamination with Republic ENDURO Stainless Steel Drums and Barrels. They never need painting. Withstand hard use and abuse. Stubbornly resist corrosion. Select the ENDURO Stainless Steel Drum or Barrel best suited to your needs. Available in 55- and 30-gallon sizes, double seamed, or all-welded construction with either I-bar or pressed-out rolling hoops. Meet ICC specifications. Write for full details.





FOR SANITARY TUBING APPLICATIONS, specify Republic ELECTRUNITE® Stainless Steel Tubing. Outstanding corrosion-resistance and a wide range of resistance to temperature, pressure, and physical damage mean that ELECTRUNITE will last indefinitely. Every foot is uniform in wall thickness, of uniform diameter, and meets every requirement called for by ASTM and ASME specifications. Send coupon for more facts, or contact your ELECTRUNITE representative.

MAXIMUM PROTECTION against the corrosive action of salt and brine can be obtained in fish, meat, and food processing equipment fabricated from Republic Titanium. It is impervious to corrosive effect and pitting action of salt water and brine. Titanium equipment is easy to handle. It is as strong as steel, yet weighs only 56% as much. Republic metallurgists are working closely with equipment manufacturers on new developments utilizing all the advantages of Titanium. The coupon will bring you more information.



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World's Widest Range of Standard Steels and Steel Products

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Please send more information on:
☐ ENDURO Stainless Steel ☐ ELECTRUNITE Tubing
☐ ENDURO Drums and Barrels ☐ Titanium

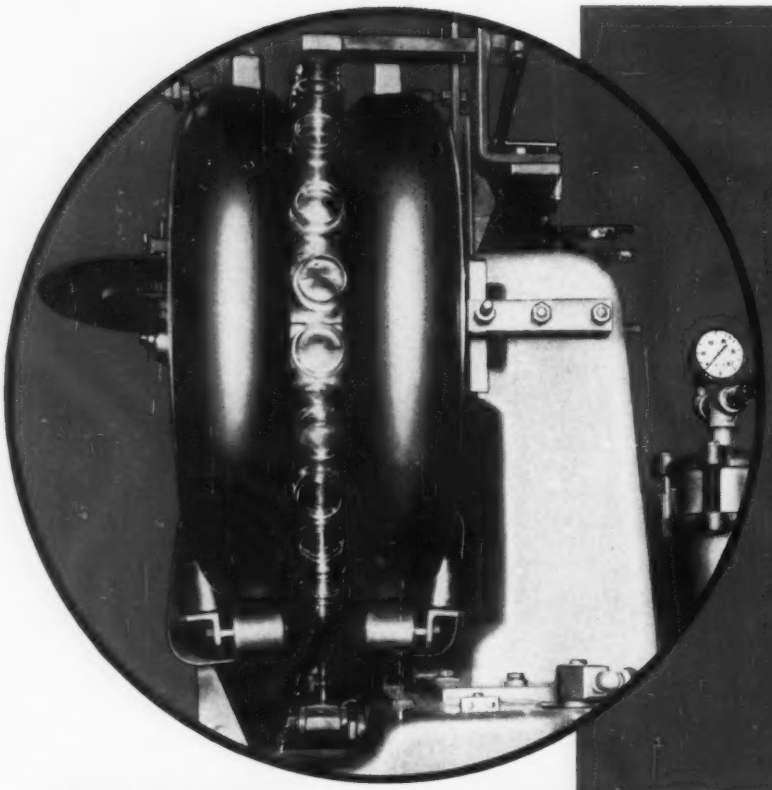
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State____

For more data, circle 256 on Reader Service Card



IT'S MORE *gentle*

A pair of softly resilient air inflated Neoprene tubes hold the containers firmly yet gently, from start to finish.

MORE *speedy*

Continuous operation eliminates transfer time — containers go straight through without interruption of pace.

MORE *flexible*

Because the inflated tubes automatically adjust to fit a range of sizes, change parts are eliminated.

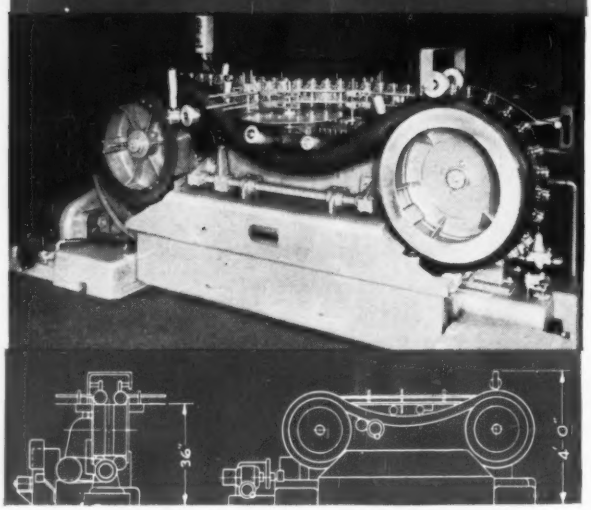
PNEUMACLEAN

For wide mouth containers and funnel neck bottles

HERE's a cleaner without a single dial, star, helix or screw feed in its entire design. There are no cams, no links, no rocking nor reciprocating motions. No wonder PNEUMACLEAN is so far ahead of the field in automatic air cleaning.

The containers ride an endless air cushion that holds them safe and sure, and carries them swiftly through the cleaning operation. They're inverted for the cleaning air blast, righted again and out they go, without even a momentary pause. Speed, up to a fabulous 500 per minute, depending on size.

Bulletin 134 has *all* the information on this smoothest, speediest method of inverted air cleaning. Your copy is waiting — just write for it.



PNEUMATIC SCALE CORP., LTD., 91 Newport Ave., Quincy 71, Mass. *Also: New York; Chicago; Dallas; Rochester; Seattle; San Francisco; Los Angeles; Rockwell Pneumatic Scale Ltd., London N.W. 2, England; Paris, France. Subsidiaries: Delamere & Williams Co., Ltd., Toronto; Carbert Mfg. Co., Inc. Cambridge, Massachusetts.*

PNEUMATIC

Packaging and Bottling Equipment

For more data, circle 257 on Reader Service Card

Ike's Budget Spares Food Operations

Government food-field operations escaped virtually untouched in the President's 'economy-axe' budget.

For USDA's research projects, Ike calls for $120 million, about the same as for the current fiscal year. The funds are tagged for various studies of food processing, distribution, and consumption.

For specific functions: Agriculture research $62 million, marketing research $9.1, state experiment stations $31.8, farmers' cooperative service $0.4.

Under marketing research comes—

- **$2.3 million on market organization and costs.** This includes studies of cost-price squeezes, effects of mergers on marketing, checks on operating expenses and margins.
- **$2.5 million on improvement and evaluation of product quality.** This embraces quality and effectiveness of new chemicals (as fluorides and insecticides) in food processing and storing; effects of temperature changes on food; new methods of food manufacture.
- **$1.6 million on market transportation and facilities,** including packaging, storing, displaying, and transporting of products.
- **$1 million (approx.) on market development.** This concerns surveys of customer acceptance of new products, checks of food markets, improvement of marketing techniques.

Extra Money for Checking Additives

Further spotlighted in the President's budget was a $1 million boost in FDA funds.

This is primarily to cover requirements in implementing last year's measure providing for regulation of chemical additives in foods—legislation which Ike calls a "substantial advance."

And since the new budget doesn't become effective until July 1, the message also asks a supplementary appropriation of $378,000 to defray added expenses of FDA's current food-additive work.

Boost for FTC . . . Retail-Probe Details

Ike's budget also specifies a $202,000 up in the investigation fund of FTC—whose current probe of "power concentration" in the retailing sphere is now spelled out as follows:

Questionnaire surveys will be made of (1) chains, (2) co-ops, and (3) voluntary group wholesalers to determine their food-marketing practices—with response mandatory.

The queries will aim to find out to what extent each concern's last-decade growth is credited to (*a*) *internal expansion* (better area service), as through renovations, store replacements, etc.); (*b*) *external expansion* (new stores, pioneering, etc.); and (*c*) *expansion by merger* (including securing of control of operations pioneered by others).

Also checked will be trends toward "vertical integration"—that is, linking with wholesalers and/or manufacturers.

Further planned are specially detailed metropolitan-area samplings in some 15 representative communities over the country.

Flemming's 'Yardstick' for Color Bill

Five principles must be embodied to assure the kind of consumer-protecting food-color law that the Department of Health, Education & Welfare seeks, says Secretary Arthur Flemming.

1. The legislation should apply to any color additive—not just coal-tar colors. 2. There should be no blanket exemption of earlier-used colors; in sort, continued use of a color should be based on its safety, not on the date it was first employed. 3. Colors should be tested and put on a Government permitted list before marketing—and, where necessary, there should be specifications of amounts that may be used and/or foods in which they may be applied (FDA now lacks such specification authority). 4. There should be authority for Government certification, as deemed necessary, of purity and safety of batches of colors (as now practiced with coal-tar colors). 5. The measure should expressly forbid color listings promoting consumer deception.

Under existing law, the Government must assume the burden of proving colors already in use are harmful. Flemming terms this a primary fault, saying it would take some 20 yr. for present FDA laboratories to test all coal-tar colors now in use.

Exception to the Secretary's stand on prior coal-tar colors is taken by the Certified Color Industry Committee. It holds that food hues long in use and employed without question should not require new testing, hence ought to be exempted by a 'grandfather clause.'

Meanwhile, the Supreme Court's support of the banning of Red No. 32 (FE Jan., p. 17) has "further armed" FDA, which now plans early action against four yellow colors claimed to be toxic.

BRIEFS

Shipping of sugar from Cuba—which is on the books to supply a third of our '59 requirements—is now getting back into stride. Trade uncertainties began to fade as Castro seated his new government which, it's to be noted, may give island's sugar producers more of a say in sales.

Global doling of our crop surpluses—instead of dollars—is urged by Sen. Mike Mansfield (D., Mont.). Currently, says USDA by way of perspective, 20 welfare agencies are distributing surplus food in 85 counties. In last fiscal year, this accounted for about 2 billion lb. of food—mainly flour, cornmeal, and nonfat dry milk.

Setting of a U. S. import quota on coffee is rescue measure sought by Latin American producers now bogged in a price-sinking glut of beans. This kind of coffee-market stabilizing hasn't previously found favor in Washington. But inroads of current crisis may bring State Department to relent.

Introduction

As part of a continuing study of the properties of distilled monoglycerides, it is of interest to know the solubility of water and water solutions in mixtures of oil and distilled monoglycerides.

This phenomenon has several interesting applications. It has been suggested, for example, that water-soluble dyes can be used to replace certain oil-soluble F.D.& C. colors by dissolving water solutions of the dyes in oil.

So . . . we tried it, and it works.

Conclusions

1. Fats and oils can be colored, using water-soluble dyes and a monoglyceride as a solubilizing agent.
2. Emulsions can be prepared from these oils and water which have an appearance quite similar to that obtained using oil-soluble dyes.
3. The amount of coloration obtainable by this technique is within a practical range.

We've been trying other things too—the solubilization of various inorganic ionic salts in oil, the dissolving of ascorbic acid, riboflavin, nicotinic acid, caffeine, quinine hydrochloride, and other such physiologically active materials. And we plan to try the solubilization in oils of such materials as sodium cyclamate, monosodium glutamate, amino acids, complexing agents, fungicides, and flavoring agents.

We're ready to talk now to processors who might improve their product or lower costs by incorporating water-soluble materials in oils or fats. And should the talks bear fruit, we have the capacity to ship *Myverol® Distilled Monoglycerides* by the tank car. ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

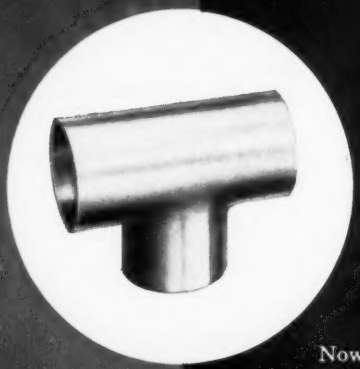
distillers of monoglycerides made from natural fats and oils

DPi

Also . . . vitamin A in bulk for foods and pharmaceuticals

Distillation Products Industries *is a division of* **Eastman Kodak Company**

TRI-CLOVER presents the all-new Quality line of "TRI-WELD" Butt Weld Sanitary Fittings and Valves



FEATURING:

- *Fittings specifically designed for "CIP" sanitary installations*
- *Highest quality construction—accurate, controlled tolerances, uniform wall thickness, high strength, light weight*
- *Fabricated from type 304 stainless steel, offering highest degree of corrosion resistance and sanitation*

Now, from Tri-Clover Division—leader in the field of sanitary fitting design and manufacture—comes the all-new "TRI-WELD" concept of butt weld stainless steel fittings, specifically designed to meet the demand for a *quality* line of stainless steel fittings and valves for permanent "CIP" installations.

Built in 1½", 2", 2½", 3" and 4" O.D. tube sizes, "TRI-WELD" fittings offer the kind of streamline design and flush joint assembly that assures full, unrestricted flow of liquids . . . the kind of quality fittings you have learned to expect from Tri-Clover for almost 40 years.

To make easier, more accurate installation *right on the job*, Tri-Clover is also offering a new portable welding unit designed to meet field requirements for simple, fast welding of "TRI-WELD" fittings and valves.

See your TRI-CLOVER DISTRIBUTOR or write for new Catalog W-159.

TRI-CLOVER

LADISH CO.

Tri-Clover Division

Kenosha Wisconsin

IN CANADA: Brantford, Ontario

EXPORT DEPT.: 8 South Michigan Ave., Chicago 3, U.S.A.

S-1058

SEE OUR EXHIBIT AT THE 1959 CANNER'S SHOW

For more data, circle 259 on Reader Service Card

NEW PACKAGES & PRODUCTS

Crab on the (Aluminum) Half Shell

A rigid-foil aluminum simulated crab shell is being used by frozen seafood processors in the South and Southwest to package their deviled crab meat.

The sanitized natural crab shells formerly used proved a problem during off-seasons when the shells proved unsuitable. The foil shells eliminate this difficulty and remove the troublesome operation needed to clean and sanitize the natural shells.

Made by Kaiser Aluminum and Chemical Sales, the shells are constructed from .005 foil. The shells are aluminum colored but have been produced in gold for a major airline.

Circle 1 on Reader Service Card

Dairy Markets Dietetic Ice Cream

An artificially sweetened Special Formula Ice Cream, designed for diabetics and others on a restricted sugar diet, has been placed on the market by Borden Co.'s Pioneer Ice Cream Division.

Distributed in the Metropolitan New York area, the product is expected to have a strong appeal to the estimated 300,000 diabetics in the area.

Development of the ice cream followed the laboratory and pilot plant phase begun when the New York and New Jersey legislatures approved the sale of artificially sweetened ice cream.

Initial flavors sold are coffee and vanilla.

Research Creates "Effortless" Design

Meticulous and comprehensive market and package research have paid off for Thomas J. Lipton in the processor's new line of prepared soup mix packages.

Designed by Frank Gianninoto and Assoc., the new design shows an appetizing and realistic bowl of hot soup on a red and white checked tablecloth. Brand name is now in an informal script.

The object of the redesign was to replace the old cold and precise design with one that was natural and casual.

Circle 2 on Reader Service Card

Hinged Spout for Aerosol

Specially designed for toppings and foam products is a new pressure can spout and valve from Precision Valve Corp. The unit has a hinged spout which permits quick and easy cleaning of both valve and spout after using without having to remove it from the container.

This is reported as the first completely sanitary one piece non-metallic assembly that may be cleaned after each usage with just a swish under the faucet.

The new spout and valve are in the same price range as current assemblies.

Circle 3 on Reader Service Card

Trick Carton Sparks Sales

An unusual "carry home" package makes a bright display piece and eye-catcher for recently marketed Nufizz instant soda pop.

The powdered product is packaged in heat-sealed aluminum foil pouches shaped like miniature bottles. A perforated strip of six of the pouches is packed in the die-cut holes of the carrier. The carrier is then folded together and sealed by pressure on adhesive areas.

Twenty-four of the carriers are, in turn, packed in a display shipper carton. The package was developed and supplied by New Haven Board and Carton Co.

Circle 4 on Reader Service Card

Leak-Proof Berry Carton

Greater labeling versatility plus 25% saving in packaging costs are advantages claimed for Crown Zellerbach Corp.'s new Pouch-in-Carton.

Designed for strawberries and other fruits packed in syrup, the package consists of a heat-sealed pouch of polyethylene coated paper, a carton, and an overwrap.

The polyethylene coating keeps liquid inside the pack even after it is thawed, so fruit can be frozen in the carton, stored indefinitely, and overwrapped as the pack is sold and shipped. The package also has up to 59% more display area than conventional canisters.

Circle 5 on Reader Service Card

Introduces New Frozen Line

Four classics of Italian cuisine—Veal Cutlet Parmigiana, Lasagne, Veal Scaloppine, and Chicken Cacciatore—mark the entrance of V. La Rosa & Sons into the frozen food market.

Each foil-wrapped 9-oz. carton contains a generous serving, with a re-heating time of less than 30 min.

Test marketing of these products has proven encouraging to the processor. Future plans call for development of a baked manicotti, cheese ravioli, meat ravioli, and baked macaroni with cheese.

Bright Design Sparks Displays

Smart new package designs are being used to merchandise W. G. Peacock Co.'s new Steak Baste. Styled to provide eye-catching displays, the cartons are printed in antique gold, red, black, and white. Three sides of the carton feature a color illustration of dishes prepared with the product. Fourth side offers recipes.

The product is brushed on broiled foods to improve appearance and enhance flavor.

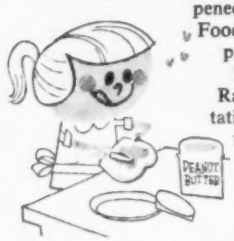
It supplements two products introduced earlier: pure garlic juice and onion juice.

Sonic puts

ULTRASONICS

to work

..in Peanut Butter increased shelf life by 150-200% ... less stabilizer ... creamier, better-flavored peanut butter ... increased sales ... that's what happened when Nabob Foods, Vancouver, put their peanut butter through Rapisonic. Cavitation "exploded" the droplets of stabilizer and finely ground peanuts to make one of the smoothest peanut butters you ever tasted.



..in Salad Dressings the best formula ... the most excellent ingredients ... blended by the best chefs, still won't keep salad dressing from separating out. A food company, famous for its dressings, tried passing them through the Sanisonic, the homogenizer which meets sanitary requirements. They licked their separation problem and ordered a second machine within six weeks.

Sonic Homogenizers develop and use all the energy right in the liquids with only 1/6 to 1/10 the power, and at a fraction of the first cost, of conventional equipment ... maintenance-negligible.

The Sanisonic

... meets sanitary requirements

Other Models

RAPISONIC ... production homogenizer

MINISONIC ... for small batches

AUTOSONIC ... continuous supply

DISPERSONIC ... abrasive emulsions

Sonic homogenizers can give you a superior emulsion, too. Send for technical bulletin

Sonic

SONIC ENGINEERING CORPORATION

146 Selleck Street, Stamford, Conn.

New Packages & Products

HEAT-AND-SERVE clam sauce is the latest addition to the Buitoni Foods line of tasty sauces. The all-purpose sauce may be used to enhance macaroni, seafood, or to prepare chowder, clam fritters, or other dishes. In national distribution, the product features fresh clams.

Packaging Briefs

High Clarity polyethylene made by Continental Can Co. is now used to package lettuce heads at Alpha Beta Food Markets, Calif. (7)

Shaped Cellophane sheets cut in parallelograms made it possible to cut costs of in-store meat and produce packaging. Sheets are manufactured by Olin Mathieson Chemical Corp. (8)

New Pressure-Sensitive clear cellophane tape called Permacel 44 is extremely thin, has high tensile strength and tear resistance. Supplier is Permacel. (9)

Cut of 67% in shipping costs is reported by Orange Products, Inc., Chicago juice concentrate packer, with use of corrugated boxes lined with Bakelite polyethylene. (10)

Spurt in ice cream sales at Knerr Dairy, Fargo, N. D., is traced to adoption of a foil-laminated carton. Foil was supplied by Alcoa. (11)

Packaging Film reported to transmit moisture but survive heat-sealing has been developed by Du Pont Co. Called PSD, material is intended for use on hard-crusted bread and rolls, etc. (12)

"Press and Stick" boxes reported in January, 1959, New Packages and Products, p. 22, are made by Stone Container Corp. (13) Circle Numbers on Reader Service Card

New Product Shorts

Two New Frozen Potato products from Seabrook Farms are diced potatoes flavored with onion, and crinkle-cut potatoes in 9 oz. packs.

Marshmallow Mix, a powder which requires the addition of boiling water and sugar, is now marketed by Edwards-Downey Co., Chicago.

Improved Chicken Noodle Soup from Campbell Soup Co. has more body, more chicken flavor.

Instant Breakfast Drink from General Foods, "Sun-up" is being advertised in Canada.

Pineapple Grapefruit Drink is newest product of Hi-C Division of Minute Maid Corp.

Chicken Hash that can be eaten hot or cold is being marketed by Marnat Packing Co., under Amy label. Package is key-opened can.

Convenience for Mother is Carnation Company's new Carnalac. The instant formula is prepared by adding water.

Two Sizes—8- and 12-oz.—of Swift's Premium Brown 'n Serve sausage are now marketed.

Single Strength grapefruit juice sweetened with sucaryl instead of sugar is being tested in Fort Wayne by the USDA and Florida Citrus Commission.

Specialty Items from Birds Eye division of General Foods now include frozen and precooked filet regale, french fried onion rings, chicken and noodle casserole for two, and macaroni and cheese for two.

Applesauce has been added to the H. J. Heinz line.

Economy Line of fresh frozen steaks, roasts, and other beef cuts has been developed by Armour & Co.

Newest Item for Baby is Heinz's vegetable, egg noodles, and turkey, distributed nationally in a 4½- (strained) and 7½-oz. (junior) jar.

Jumbo Size Servings of Swanson's Chunks o' Turkey and Chunks o' Chicken are now available in new 30-oz. cans.

Frozen Chinese Soups, egg and won ton, are now available from Chun King Sales, Inc.

POLYETHYLENE SQUEEZE CAN with metal ends is being used by Food Foundation, Inc., Chicago, to package its table syrup. Using the Timber Trail label, the package is printed in bright yellow, brown and red.

Lipton has a reason...

When Lipton redesigned the package for its famous prepared soup mix, it carried out the red checkered table cloth motif from carton to pouch, combining product protection with greater brand identification, as well as appetite appeal and "brand image" improvement. And when Riegel prints the attractive Lipton design on a special Pouchpak of laminated paper and foil, it also prints cooking directions and recipes... right where it is most convenient for the housewife. Result: The pouch guards the vigorous soup flavor, and affords a sales bonus as well.

It's another proof that *protected by Riegel* means more... product protection always, plus flexible packaging materials that are:

- ...tailored to run at high speeds on automatic machines
- ...made to your own specifications; printed, waxed, coated and laminated combinations of all types
- ...packaging materials that are made right, run right, and are priced right.

Hundreds of today's best-sellers benefit from Riegel's uniformly effective system of product protection. You can, too. Write Riegel Paper Corporation, 260 Madison Avenue, New York 16, N. Y.

Riegel

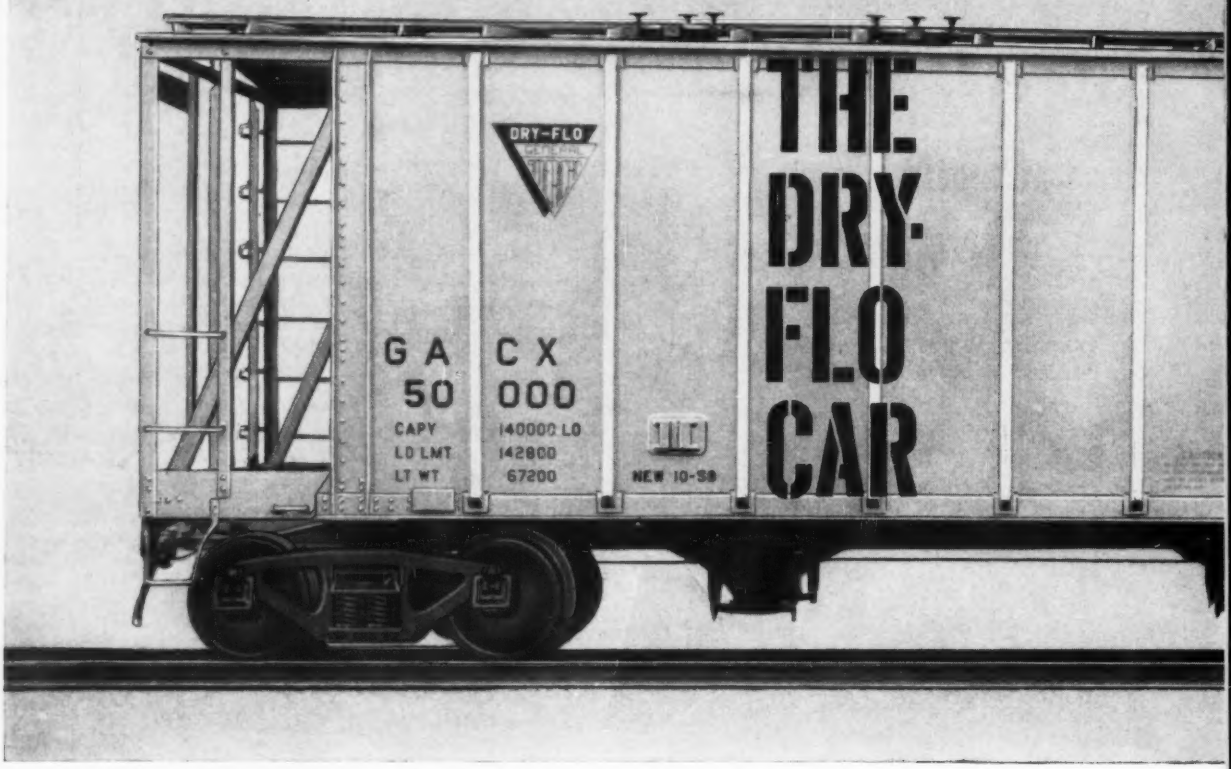
PROTECTIVE PACKAGING MATERIALS

Lipton Soup Mix is protected by a special POUCHPAK laminate of foil, pouch paper and polyethylene, made and printed by Riegel. Heat sealed at high speed on Bartelt equipment.*

*TM

For more data, circle 261 on Reader Service Card

Another "First" from General American



New companion to the Airslide® car, the Dry-Flo car permits you to bulk-ship many dry ingredients (especially foodstuffs and other materials that require special protection from contamination) that ordinarily must be shipped in individual containers.

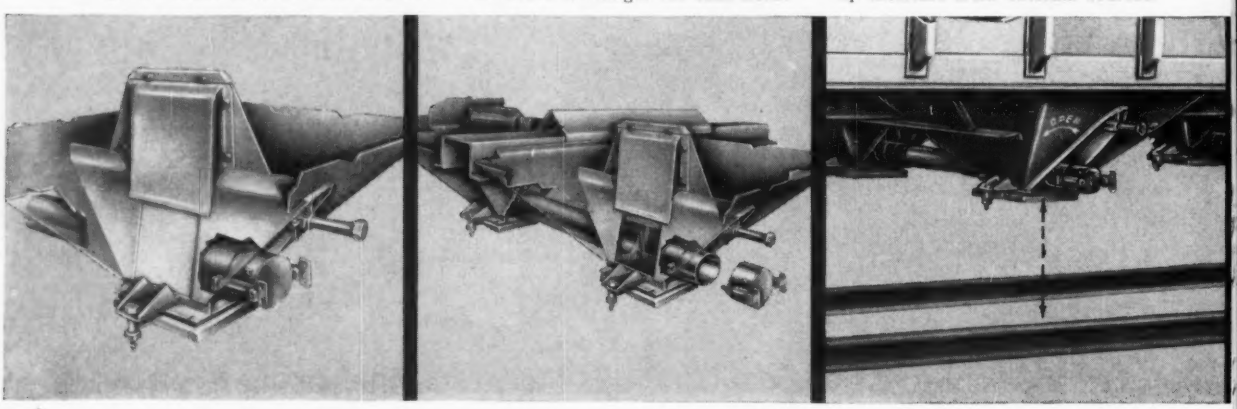
General American's new Dry-Flo car is competitive in price with ordinary covered hopper cars and offers you these exclusive advantages:

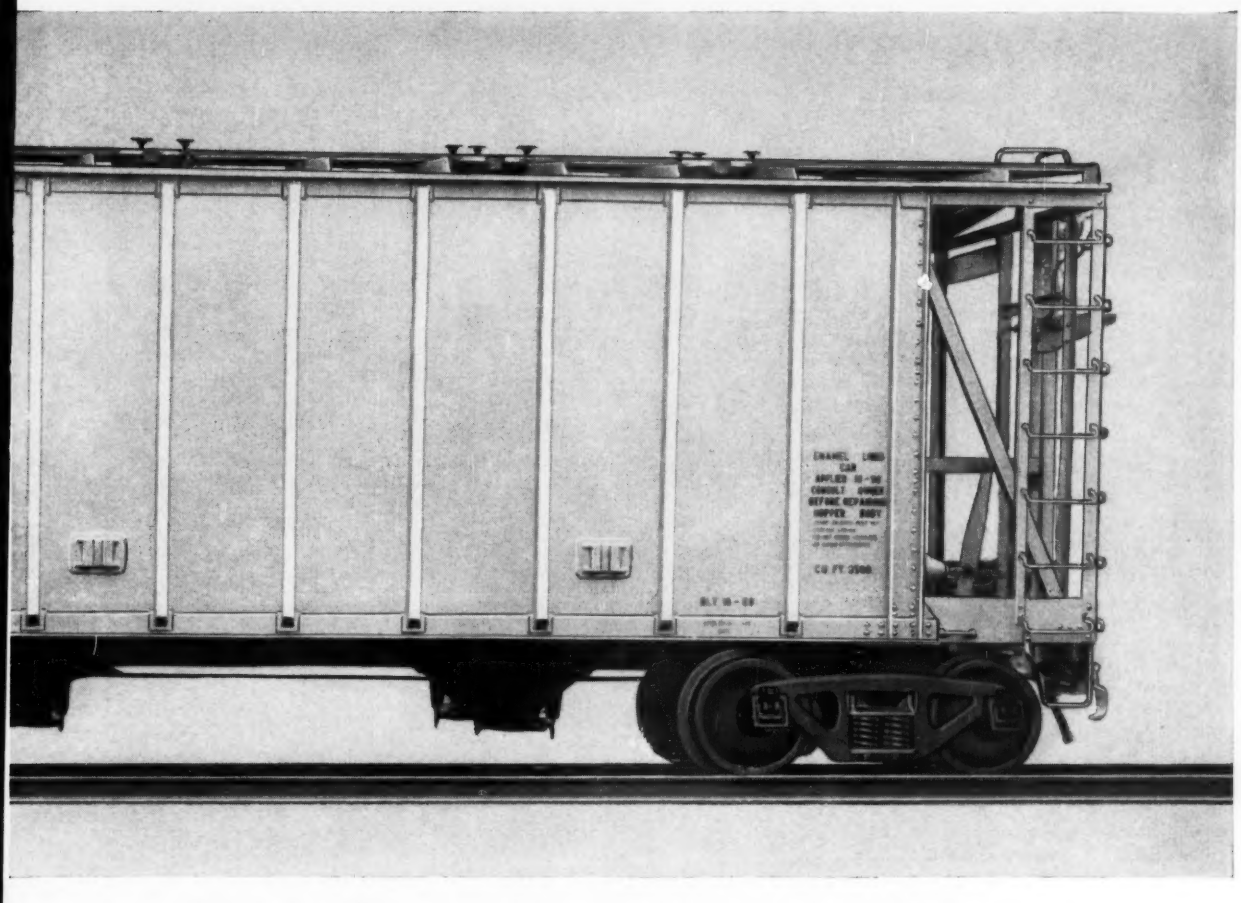
1. Unloading gates are *entirely within* the car . . . eliminating pick-up of foreign material.

2. Gate valves open and close *vertically*, and are not subject to pressure of the load. Rate of flow can be adjusted as required.

3. The DRY-FLO* car unloads easily, either pneumatically or mechanically. Only two nozzles are required for the car with 2450 cubic feet capacity, three for the larger car that holds 3500 cubic feet.

4. Once car is loaded and hatches sealed, no outside air can enter. For this reason hygroscopic materials shipped in Dry-Flo cars cannot pick-up moisture from external sources.





5. The DRY-FLO car provides *considerably more* clearance for unloading . . . permits use of *all types* of unloading equipment at rail siding or team track.

6. Roof construction features exterior car lines . . . provides a *smooth, unbroken ceiling surface* and eliminates hang-up points.

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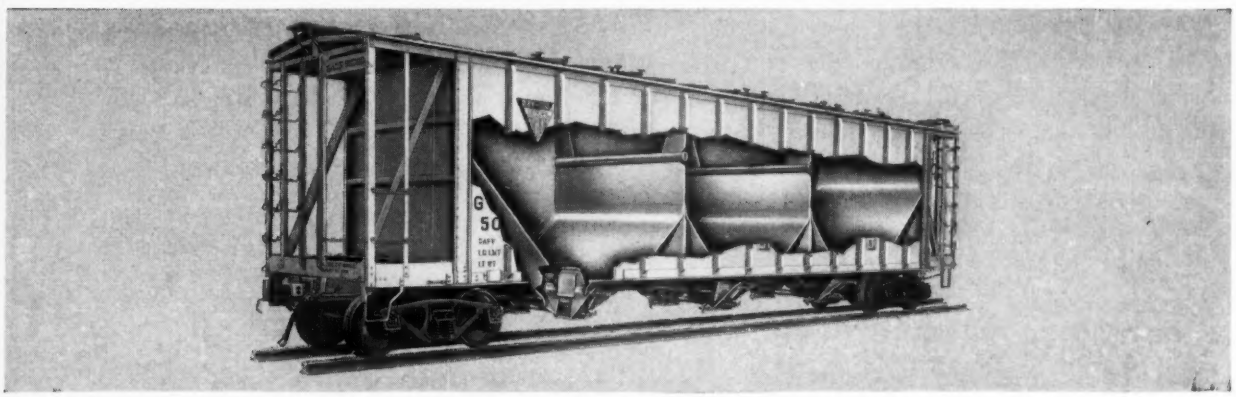

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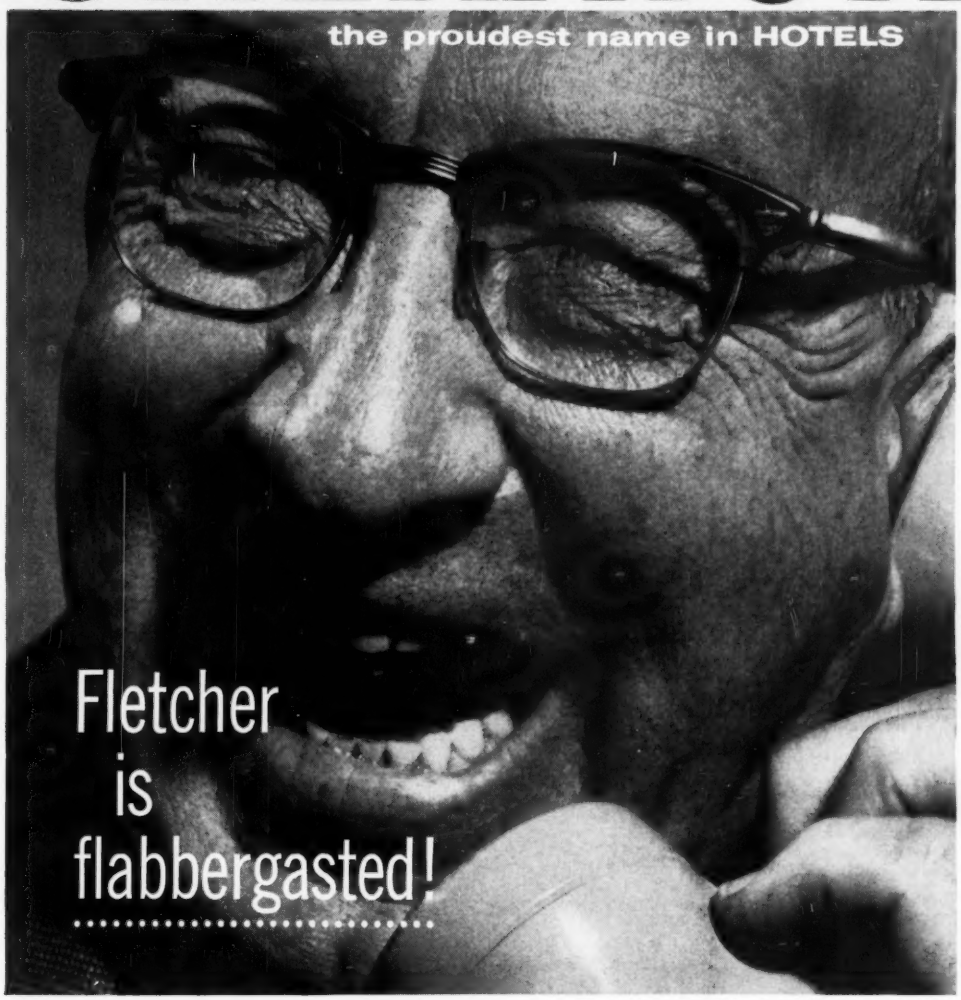

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WASHINGTON
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BALTIMORE
PHILADELPHIA
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ATLANTIC CITY
SPRINGFIELD, Mass.
ALBANY
ROCHESTER
BUFFALO
SYRACUSE
BINGHAMTON, N.Y.
(opens early 1959)

MIDWEST
CHICAGO
DETROIT
CLEVELAND
CINCINNATI
ST. LOUIS
OMAHA
AKRON
INDIANAPOLIS
FRENCH LICK, Ind.
RAPID CITY, S. D.
SIOUX CITY, Iowa
SIOUX FALLS, S. D.
CEDAR RAPIDS, Iowa

SOUTH
LOUISVILLE
DALLAS
(opens early 1959)
AUSTIN
MOBILE

WEST COAST
SAN FRANCISCO
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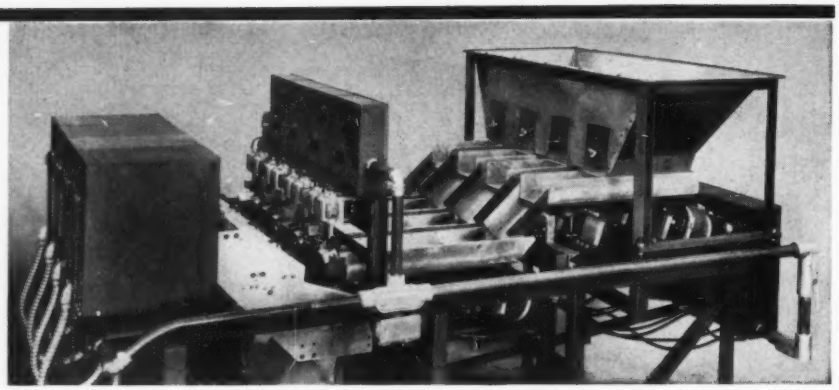
The new Model PS cantilever net weight scale is engineered to maintain close net weight adjustments. This is accomplished through the elimination of balances and knife edges and the substitution of a series of bending leaf springs. A spring-actuated roller reduces friction, and an electro magnet controls dribble feed with extreme accuracy. The Transwrap scale is easily adjustable through the full range of weights, important because Jack's...



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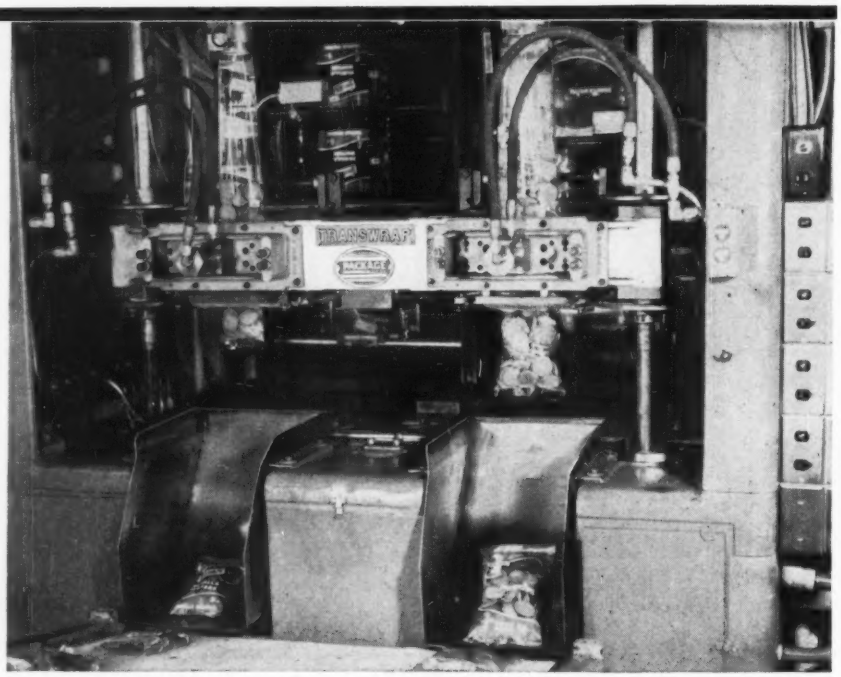
To find out how the Transwrap can help solve your packaging problems consult your PACKAGE representative today.



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Show Clean Hands and Cooperate in FTC Probe

An additional $202 thousand to finance the Federal Trade Commission's investigation of the trend to bigness among food retailing companies has been approved by President Eisenhower. While this may be inadequate to do a thorough job, it does reflect the seriousness with which the Federal government views the situation.

The industry itself is no less concerned. "It would be a great national tragedy to allow the same pattern of concentration to develop in food distribution that has taken place in the manufacture of automobiles." That is the way it looks to National Assn. of Retail Grocers, in the words of Henry Bison, general counsel.

Situation serious for manufacturers

Food manufacturers have good reasons to be fearful, too. The trend to larger and fewer food stores is one thing. It has contributed importantly to higher efficiency and lower costs in food distribution. The trend to larger and very powerful retail organizations is something else. It enables retailers more and more to dictate to manufacturers the terms of doing business. This is inevitable. It is almost essential that manufacturers have their products on the shelves of the big retailers.

The trend to larger retail firms also hurts manufacturers by increases in the private-label business. This cuts into brand manufacturers' volume. It increases cost by forcing more concessions. It requires more brand advertising to pre-sell consumers before they go shopping. Witness the plans of leading food manufacturers to increase their already high advertising budgets by 9% this year.

The trend to concentration in retailing also forces mergers among manufacturers to achieve a stronger sales push, to get more shelf space, and to cut unit costs.

Manufacturers have long been concerned about the power and practices of retailers—upon whom they must depend to move product to consumers. And they could gain much from the FTC investigation.

Unfortunately, many manufacturers have abetted undesirable and costly trade practices by participation—to gain retailer favor, shelf space, and sales volume. So any investigation of retail operations inevitably will involve the practices of manufacturers. This could mean bad publicity. It might lead to unfortunate legislation.

Watch trade practices now, or else—

So it is more vital than ever before to do what leaders have long recommended—abide by the Robinson-Patman law, and otherwise encourage sound trade practices. Enlightened manufacturers and distributors both agree that R-P compliance is important. But it takes more than lip-service to minimize "wheeling and dealing" operations that violate sound business procedures and harm the entire industry.

If our industry shows respectably clean hands in FTC's probe into the retail field—and if manufacturers report and document improper demands and practices by retailers—the investigation can be a boon. Otherwise, it will be a two-edged sword.

One thing's for sure: Strongly backed by small business interests, FTC is not fooling. And Congress likely will enact more restrictive legislation if such is indicated by the results of the investigation.

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You can dispense with oil filters and dust filters when you install ®Nash® Clean Air Compressors. You can save the cost of maintaining these devices. You can greatly reduce instrument maintenance costs. For the Nash employs no internal lubrication, therefore no troublesome oil is in the delivered air. Moreover, air from a Nash is thoroughly washed and cooled as it passes thru the pump. Dust in the plant atmosphere, even fly ash, is immediately removed.

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Tote Boxes

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#24 available without handles to fit Cres-Cor Pan Rack
Exclusive Open Bead design
Stack when filled
Strong, smooth one-piece handle
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Dolly available for #35 shown at left.

You asked for it . . . a smaller version of the famous Wear-Ever #35 Tote Box. It's our new #24, shown at top in the above illustration, and it's available *now.*

We've designed it particularly for you whose needs call for a lighter, smaller, easier-to-handle container. It is available without handles, to fit perfectly in a Cres-Cor pan rack.

This new box incorporates the same quality construction features as our standard size box—special extra hard wrought Wear-Ever Aluminum Alloy, sanitary open bead and extra strong, double-embossed bottom.

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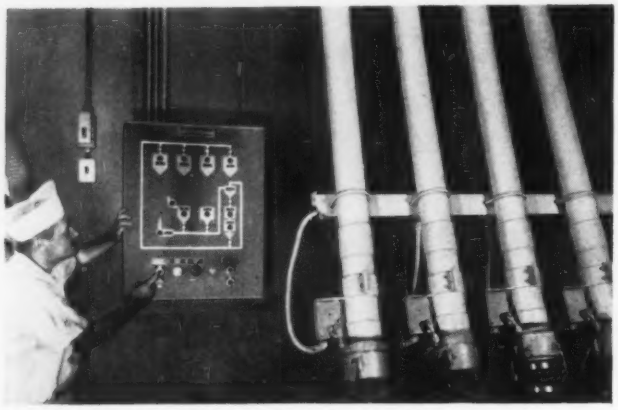
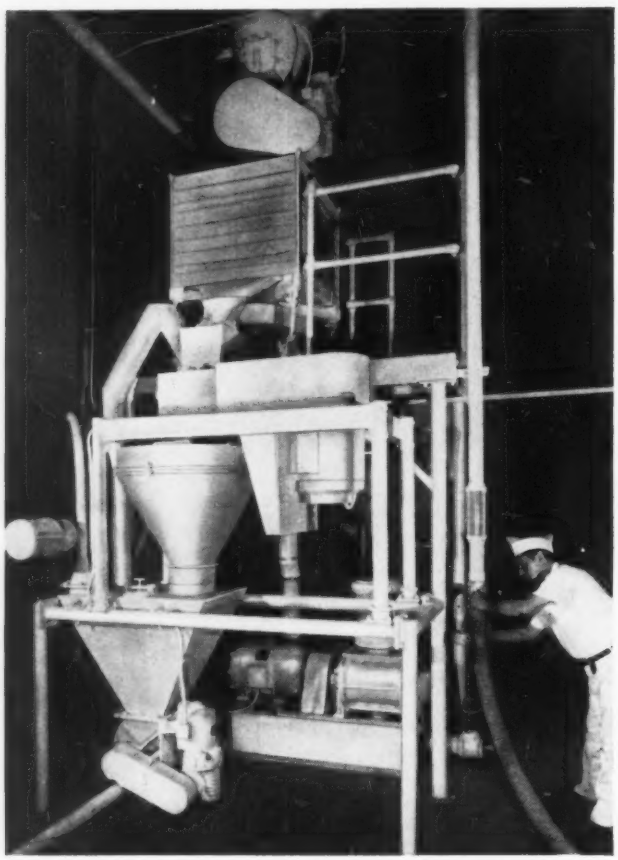


Central Control Panel of Jewel Tea's flour-handling system. At right are main conveying lines—each to a separate bin.



FULLER

Pneumatic Conveying System Provides Low Cost, Sanitary Flour Handling Method For New Jewel Tea Co., Inc. Bakery

Automation . . . at the new Jewel Tea Company bakery in Melrose Park, Ill., . . . means baking more than four tons of bread an hour under the highest standards of sanitation, at the lowest possible production cost. A Fuller-engineered *pneumatic* flour-conveying system helps make this record performance possible.

This automatic, smooth running pneumatic conveying system is controlled by one man and a centrally located push-button control panel. By making a simple connection, turning a switch and pressing a button, the operator empties 100,000 lb. GACX Airslide carloads, of bulk flour, into storage bins. Other buttons send the flour through predetermined cycles of sifting, weighing, mixing — in dust-tight, self-cleaning pneumatic lines.

Compact, flexible, easy-to-install Fuller pneumatic conveying systems are ***integrated*** into your plant processed by Fuller specialists. Write or phone today outlining objectives such as capacity, distance and material to be handled. Fuller engineers will gladly furnish additional information and make appropriate recommendations.

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The big advantages of Taper-Lock mounting are now

machining—saving time. They are "easy on—easy off"

Photo courtesy of Cities Service Oil Company (Delaware)

Now! Buy <u>one</u> truck . . . do the job of <u>two</u>!

The *Clarklift* fork trucks pictured above are demonstrating a new *dual* function. They stack 30% higher than equipment of similar, retracted mast height . . . can *also* drive through low boxcar doors and other tight clearances. Actually, it means you're getting two machines in one.

Utilizing Clark's new *Triple* Stage Upright, you are able to take better advantage of the *full* height of your warehouse . . . yet, use the *same* fork truck for loading rail cars or highway trucks, low-door elevators, etc. The Triple Stage Upright enables your equipment to *work full time*, and on many *varied jobs* with no stacking height loss, no clearance problems, *no work stoppages*.

A specification sheet showing complete details is available on request. Simply write: Triple Stage Upright, Clark Equipment Company, Battle Creek, Michigan.

CLARK® EQUIPMENT

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The big advantages of Taper-Lock mounting are now available for practically all of your sprocket installations. Below is listed the new wide range of types and sizes offered by Dodge!

This important expansion of the Dodge line is the result of the enormous popularity of the Taper-Lock idea. Taper-Lock Sprockets are *modern*. Industry likes them because they go straight from shelf to shaft without machining—saving time. They are "easy on—easy off"—saving work. Their bushings can be re-used, not only in replacement sprockets, but in sprockets of different sizes and also in Taper-Lock Sheaves, Couplings, Conveyor Pulleys. Taper-Lock saves inventory—and money!

Dodge Taper-Lock Sprockets and Dodge Roller Chain are available through your local Dodge Distributor. Call him. Or write us for bulletin.

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THE "SPROCKET THAT NEEDS NO REBORING" AVAILABLE IN A NEW WIDE RANGE OF TYPES AND SIZES

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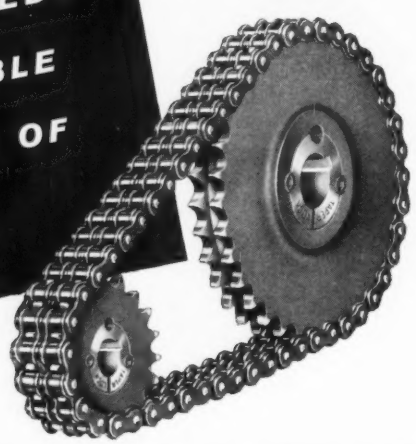

DOUBLE PITCH CHAIN and SPROCKETS

Transmission Series (No. 2040 to 2080) and Conveyor Series (No. 2040 to 2100). Sprockets to 112 teeth—including, for the first time, stock sprockets of 17, 19, 21, 23, 25 and 35 teeth *made especially for double pitch chain*. Introduced by Dodge, these sprockets are designed for even distribution of tooth engagement and absolute accuracy of mesh. Wear is reduced by half. Life of chain and sprocket is doubled!

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Steel Plate, Type A. No. 35 to 120. Mandrel bore, bored-to-size or Taper-Lock.

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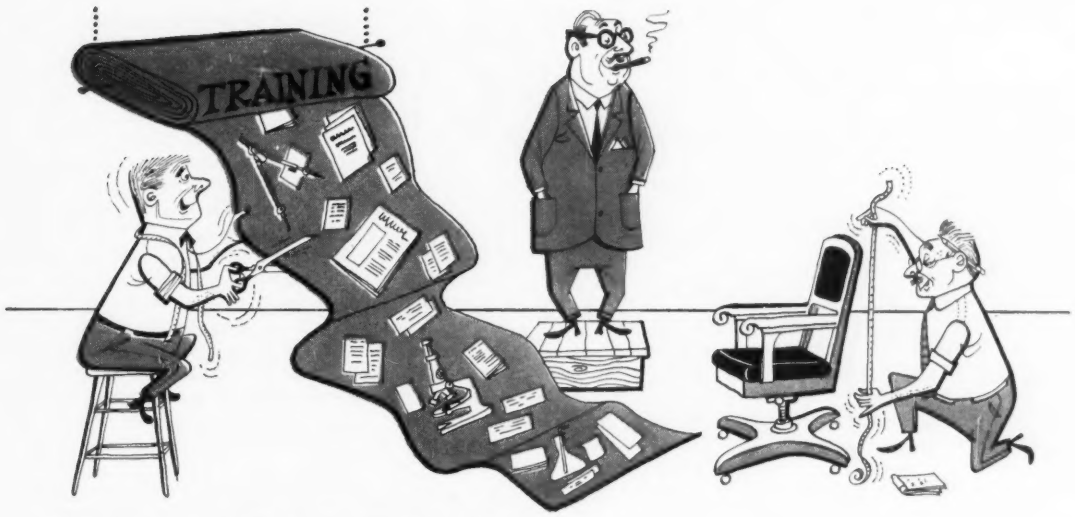


"Training is tailored to the man and the job."

Can You Grow Good Executives?

Farsighted food companies say, "Yes." Use new tactics to up efficiency of development programs

MORE FOOD COMPANIES are recognizing the need for a formal approach to management development.

"We had a 'by guess and by golly' management development program, and by golly it wasn't doing the job. It simply wasn't turning up enough people to fulfill our management needs," frankly states V. E. Kommer, personnel director of Ward Baking Co.

"In 1955, like many companies, we said we intended to develop our own people, yet we had no clear approach as to how we were going to do it. We had statements by company officials that our policy was promotion from within—but there was a wide gap between the statements and having qualified men ready when openings occurred."

A prime obstacle to bridging such a gap can be sheer lack of clear definition of the job to be done. The very idea of planned production of management talent is under 40 years old—younger than the average top executive. Chances are that the company with a "going" program has installed it within the last 10 years. And the big rush of enthusiasm has actually occurred only in the last 5.

In such a new and complex field, there are no tried and true rules for success. Companies are experimenting zestfully with varying staff and line organizations, appraisal systems for selecting individuals to be developed, techniques of training, and means of measuring results.

Are Some Wasting Money?

AMA suggests that "management development is anything which increases the individual's ability or productive capacity on the job," but insists on the need for disciplining training efforts. "When a company does not tie its management development activities firmly to its corporate objectives, it is probably just wasting money."

Companies have spent as long as 3 years in study and preparation of a program. Ward Baking Co. in 1957 took about 5 months to shape the program it now has. It had a solid body of trial-and-error from its "by guess and by golly" activities, and it has carried over the principles found to be pertinent. Kommer attended an AMA seminar. And each member of Ward's 7-man executive committee for management development, headed by President R. Arnold Jackson, dug into the task of planning.

"We decided," says Kommer, "to use the same approach we had found successful in our other operations—decentralization.

"Initially, our program was very centralized. In 1955, we had just one management development committee at the home office. We now have 26 committees—one at each of our 21 plants, one at each of the 4 regional levels, and our executive office committee for overall company planning. The important fact is that the nearest committee is on the spot. It's not a thousand miles away from the job to be done."

Ward literally "charted" its objectives. Each part of the company—plant, regional district, and executive office department—was instructed to prepare a chart showing its own organizational structure. Purpose was to show clearly the executive jobs to be filled, "those we needed men for immediately, and those we were going to need men for in 5, 10 years, etc."

These charts (with accompanying material) spelled out the requirements of the posts, the responsibility and authority that goes with each, how each relates to others and to the company as a whole. Maintaining

VIRGINIA VAN ZANDT
Editorial Assistant, "Food Engineering"

FOOD ENGINEERING
FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

"Every department head thinks his own job is toughest."

the charts is a continuing task of the management development committees.

"With this blueprint of our executive needs, we can point our efforts toward developing men to fill those posts," says Kommer.

Who Gets Developed?

Backbone of an effective development program is a sound means of appraising individuals. Big organizations are too apt to bury their talent. Functions, of necessity, become specialized. And men of real potential may trudge ruts of specialization with never an opportunity to demonstrate—or develop—managerial ability.

Able individuals can even get lost geographically: They may be so far from the main office that they never come to the attention of the right people. A good appraisal system should spot this talent in the company's reservoir of manpower, pinpoint strengths and weaknesses, and thus provide the necessary guidance for development activities.

Admittedly, the evaluation of men is a tough job. Ward rests the weight of such evaluation mostly on the individual's supervisor. Kommer explains:

"Our feeling was that we wanted to emphasize the personal relationship between a man and his supervisor. The person that should know a man best is his immediate supervisor."

Ward believes one of the most significant aspects of its program is the policy that promotions will not be given a supervisor or executive unless he has developed one of his subordinates as a qualified successor.

One evaluation form is used. Titled *Appraisal and Development Guide*, it is filled out each year, at the individual's employment anniversary, by the supervisor and one other higher-level person. For balance and objectivity, the latter appraiser works with the supervisor.

The form stresses job performance. "The one territory that cannot be argued is a man's job performance."

In addition, Ward sometimes gets outside appraisals. On occasion, it sends people to a testing service. The more important the position, the more urgent becomes the need for information about the man. Disagreement on individuals is also an indication for further criteria. "The best promotions are made when we have the greatest amount of information."

However, testing results are still played down as a deciding factor in promotions. Job performance remains the pivot.

An interesting point is the weight that Ward attaches to the physical examination. "We consider health—sheer physical stamina—a much more important requirement for executives now than formerly, because of today's increased strain on them."

Tailored Training

Ward's educational planning stems from the annual development interview, which the supervisor holds with an individual following completion of the appraisal form. The company gives stringent instructions for the conduct of the interview. Again the stress is on job performance.

"Put your finger on the specific job performance and results you want," the supervisor is admonished. And, "The main purpose is for you and the man to agree on a plan that will help him."

In line with this targeting, training is tailored to the individual and to the job to be filled. An example is the tailored training of Bill—

At the time of his selection, Bill was a branch plant general sales manager. The spot open for him was plant superintendent. First he trained for the new responsibilities by understudying the plant superintendent. Then a man was sent from the executive office manufacturing department to give him intensive special training on costs and cost analysis.

Next, Bill was sent to selected company plants for training in other functions he'd have to handle as superintendent. His course was finished by bringing him into the main office. There he was thoroughly indoctrinated with the mutual responsibilities of executive office departments and the plant.

The plan relied heavily on learning by doing. In another instance, the approach might be different. The company might, for example, send an individual to a course at the American Institute of Baking.

Most accurate training is that matched to the man and the definite job. Such individual treatment may include understudying, coaching by supervisors, indoctrination and special briefing by company-assigned "teachers," etc. Many companies also have excellent in-plant educational projects for groups. The Nestle Co.'s comprehensive program includes a 13-week series of management lectures, a seminar for salesmen, and periodic "planned discussions" on problems of balancing production requirements and the human needs of employees.

A popular technique is to send selected individuals to seminars or business training courses offered by industrial associations and by universities (as Harvard's advanced management course).

An ambitious newcomer to such facilities is Nestle's Management Development Institute at Lausanne, Switzerland. About half the students will come from Nestle affiliates, but students from business firms throughout the world will make up the other half.

Instruction patterned after Harvard's case history method is conducted by a faculty of present or recent members of the Harvard Business School faculty.

An advantage cited for outside workshop training is that the participant gets the benefit of fresh thinking. According to Nestle, "One of the best ways to do a better job is to have a broad knowledge of how

other people do similar work for other companies."

Psychological Boost

Specific goals of training vary enormously. One company sent a "rough diamond" executive for a fine arts course, with the frank objective of fitting him to meet more confidently the people he associated with at his new level.

Experience remains the best teacher, so job rotation is a frequent practice. One objection to this: It disrupts company procedures because it keeps positions filled with too many people who are inexperienced and/or "just passing through."

American Chicle Co. tried the novel switch of exchanging two department heads. However, neither man really assumed the management of the department to which he was transferred. Instead, the stay-behind assistant took over his absent boss' job, and the transferred man came in as a clerk, a learner.

Incidentally, the understudy assistant was not permitted to get in touch with his boss. He was on his own in running the department. And thus four men were being trained rather than two.

This project covered 3 months. "And to keep things from totally falling apart"—as Thomas Mannion, originator of the experiment, puts it—the time was split. Thus, each transferee spent 3 weeks in his training job, returned to his own for a week, then went back to the training, and so on until he stayed put as a learner for the last 4 weeks.

As to results, the emcee of the switch sums up: "Each man gained a sufficient grasp so that in an emergency he could take over the other job. He got an understanding of the other man's responsibilities—and his burdens.

"Every department head thinks his own job is the toughest. He sometimes makes unreasonable demands on the other fellow. Take Payroll. Other department heads are forever wanting figures, immediate analyses, pay ahead of time for certain employees, and so on.

"If the transferee learned no more than just how tough the other man's job is, I'd have been completely satisfied. Department heads have to work together, and anything that oils the works is that much to the good. Actually, we also got improvements in the departments, because the new men came up with excellent ideas—which we used.

"Put any intelligent man on a new job and he's much more likely to spot something requiring a change than the man who looks at the job every day.

"And there's this, too: A transfer can jolt a guy out of complacency. He may have been just jogging along doing the same job in the same way, day after day. He will come back after a transfer, different.

"We found," the emcee concludes, "that the experience definitely paid off. We aim to do more of it."

Checking Results

Most companies are convinced that their experiences with training people for management have paid off. But pinning down that pay-off remains foggy. Enthusiastic companies will maintain stoutly: "We know our program is worthwhile. We can tell, we can feel it."

And probably it is. But how do you go about getting precise measurements in the intangible field of human growth? Navigation in the sphere of human phenomena still takes a good deal of "flying by the seat of the pants."

The difficulty of gaging is increased as the objective of the program is shifted from filling vacancies to growth of capacity *per se*. Personnel Manager Robert H. Cronk defines Nestle's goal as follows:

"The primary objective is to train employees for maximum performance in their present jobs, with a view to attaining the second objective of developing potential managers, supervisors, and foremen who will deliver maximum performance on future jobs."

Ward Baking Co. sums up its goal as three-fold: "Develop and maintain sound organization; prepare employees to do better work in present assignments; and develop and train replacements at all levels."

"He simply doesn't have the freedom."

It expects to measure its success "by whether we produce enough qualified people to fill our management posts." However, this in itself can be a large order, in an expanding company. Ward prepares an inventory in January of each year, titled *Management Readiness Report*. First measurement of its new approach will be the report on 1958. "We'll see how many people we have ready for advancement."

The specifications for men are less tangible than those for machines. But Charles P. McCormick, board chairman of McCormick & Co., a firm that pioneered in planned production of executives for the future, has this to say about the relative importance of the two:

"Business is primarily a matter of people. Men, not machines alone, have brought the United States to its dominant position in world industry. The machines would never be here if men had not inspired and used their minds and energies toward making these great contributions to mankind. No machine was ever invented that performed any useful function until people operated it and managed it."

The task of providing key people for industry looms ever larger. Qualified manpower is already in short supply, and today's push toward decentralization puts an added squeeze on what's available, because it allots management to more people. And not only do we need more executives but better ones: The executive post itself keeps getting tougher.

"Take the job of plant manager," says the personnel director of one large food company. "Stack it up against the same job in former, easier times. Today's manager has more problems, more responsibilities, more interference from outside.

"He has to know more—about sales, about complicated production techniques, about costs. He has to have a better appreciation of personnel relations. He has to comply with government regulations. He has to have the ability to deal with unions and their representatives. And he must coordinate all these complex outside and in-plant demands. He simply doesn't have the freedom that a plant manager used to have."

So more and more companies look hopefully to special development programs to provide management manpower in the quality and quantity required. —*End*

For free reprint of this article, write H-1 on Reader Service Card, back of issue

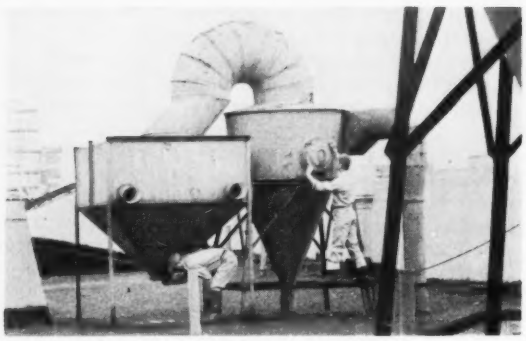
How baker's crews "bear down" inside . . .

WALLS are speedily cleansed by crack team

FLOORS get daily scrubbing, scalding rinse

. . . outside . . .

DRIVES, WALKS are power-swept



ROOF CYCLONES are checked, cleaned

"We Put *1 Worker in Every 10*

Payoff of Tasty Baking Co.'s strict program is constant cleanliness—assuring top product quality for highest sales . . . Five areas of action covered in "all-over" routine

OUR WORKING CONCEPT at The Tasty Baking Co., Philadelphia, is that sanitation is inseparably a part of quality control.

Accordingly, we put 1 worker in every 10 on sanitation—in a program encompassing these 5 spheres of action: Materials, machinery, laundry, buildings, and grounds.

Our company—baker of Tastykake and Tasty-Pie—has developed strict routines to cover the specific problems in each of the categories. Here, coordination is the key, and it is assured by Sanitation & Service Superintendent James Barrett, who heads a corps of experienced personnel.

ALFRED LINGO

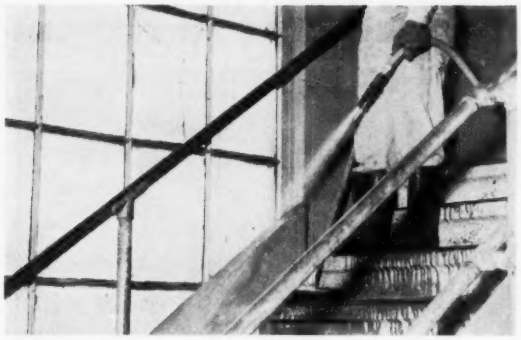
Director of Production, The Tasty Baking Co., Philadelphia

Prime effort, of course, is safeguarding of the production facilities from contamination—beginning with raw-material reception and continuing through production and shipping.

As production halts for the day in the various departments, cleanup squads go into action in their assigned areas. These employees are titled as "Operators" (the unfavorable designation "janitor" having been specifically shunned).

After wiping down and washing equipment, special steam hoselines are connected and floors are scrubbed. Considering that each floor has approximately 68,000 sq.ft. of area, the cleaning is a major task. All concrete and tile floors are scrubbed and rinsed off with scalding 175F. water, which is then flushed into convenient drains.

Ovens require special procedures. Pans and molds must be washed after each baking cycle. And periodically, traveling oven plates must be cleaned with special scraping equipment. Syrup tanks and pie-filling containers



STAIRWELLS get stringent washing

SILLS are specially targeted in cleaning

. . . and on trucks

VEHICLES are soaped, mechanically rinsed

on Sanitation"

are washed and sterilized daily, as are also fruit-storage hoppers.

Extensive steps are taken to prevent contamination in the production departments, where batches of blended materials await mixing by bakers. These areas are separated by wall-to-ceiling mesh partitions equipped with doors that are locked when authorized personnel are absent.

While the floor-to-floor cleanup progresses on a top-down routine, other workers flush down stairwells and fire escapes within the building.

Structural materials of our plant were specifically chosen to stand up ruggedly under the grueling cleansing operations. Beveling where walls meet floors prevents dirt accumulation. All windows are screened, and all exits have additional inner screened doors for extra protection.

Manufacturing and shipping departments are well-lighted. Walls are regularly washed and painted. Windows get daily washings. Sills receive daily wipe-downs by women crew members. Sanitation crews tour the building, seeing to it that both interior and exterior surfaces are ever spic and span.

Plant grounds, driveways, and sidewalks get specific attention. The front sidewalk is power-swept twice daily. Any loose paper and debris are removed. Driveways to and from plant areas are flushed down daily.

Railroad receiving docks are covered, hence materials are not exposed to winds that might carry dust or dirt. Here, rail ties are mounted into asphalt, minimizing possibilities of dirt accumulation.

Further, the roof of the plant gets a daily inspection. Sugar cyclones are checked and cleaned. Spouts and roof drains are kept free of debris.

Since proper work apparel is a logical part of sanitation, the laundering and issuing of clean uniforms to employees are carefully supervised. In addition to the sanitation factor, clean uniforms give workers a sense of pride in their jobs and in their company.

The company-maintained laundry handles a capacity of 12,000 lb. of clothing and towels each week, including some 8,000 hand towels. Cost of this reaches a significant figure. In 1950, laundering expenses were $45,000. By 1957 the total had jumped to $75,000.

Tasty's royal blue trucks—noted for their bright, clean appearance—deliver the small cakes and pies to food outlets. These vehicles are thoroughly handswept every day and cleansed twice weekly by a mechanical washer.

Even the salesmen who sell and deliver Tastykake and Tasty-Pie products are included in the broad sanitation program. They wear clean, freshly pressed uniforms at all times, thus always appear neat and smartly dressed.

Salesmen are prohibited from making emergency tire changes or mechanical repairs of any kind. They are advised to call the Tasty transportation department when needing emergency help. Or, if too far away from the plant, to hire mechanical help from a service station or garage. They are ordered to keep themselves and their uniforms clean at all times, and this ruling is enforced.

Sanitation is all-embracing at Tasty. And studies are constantly underway to improve sanitation facilities. New techniques make for higher company performance.—*End*

How Gerber Streamlines Its Paperwork

Its facile xerography* speeds copies—hence circulation—of essential forms, reports, charts, and drawings . . . System puts jobs through to duplicator in mere minutes, reproduces to sizes as desired

SIZE FLEXIBILITY is a No. 1 advantage of packer's system. This camera unit can reduce typewriter copy anywhere down to 6 pt. (to fit limited space) or boost it anywhere up to 24 pt. (for special display impact).

WHEN IT'S EFFICIENT, paperwork keeps your operations running smoothly. But when it isn't, your performance can really get fouled.

Consider the immense number of data communications demanded today. The standard items alone add up to a veritable flood, from reports and invoices to charts and drawings.

Speedy supply and flow of these items is essential—meaning that a fast, effective reproduction service is a major "must."

How such a system steps up operations is demonstrated by the striking "paperwork streamlining" at Gerber Products, Inc., Fremont, Mich. Here, xerography is the prime mover.

Says Office Service Manager Richard Hastings: "We have to produce such a wide variety of forms—different types, sizes, enlargements, and reductions—that our reproduction system had to be a real 'workhorse.' Xerography fits all our needs.

"Without a doubt, it has reduced our duplicating costs by at least a third, as compared with our previous methods. But that isn't half the story. What we are so pleased with is the tremendous savings in time and the operating flexibility.

"Take the old tedious job of 'makin up' the original copy for offset reproduction. It often required hours for a girl to type and space a given document. Now, in many cases, we can make our offset master directly from material already typed.

"Even calls for different type sizes are readily handled. For with the camera unit we can reduce standard pica-size typewriter copy in a range of sizes down to 6 pt. or enlarge it anywhere up to 24 pt. This way, typed copy can be sized to space.

"Furthermore, signatures on letters can be duplicated intact—no need for special plates. In fact, any line work can be reproduced—charts, drawings, sketches."

Before installation of this copying equipment (XeroX, Haloid Xerox Inc., Rochester, N. Y.), Gerber had tried a number of other methods. But they did not, says Ora Grove, office-maintenance supervisor, afford the needed all-purpose flexibility of enlarging and reducing.

With frequent demands of this kind, Gerber was constantly required to send copy to Grand Rapids, 50 miles distant, for negatives and metal plates. This meant a delay of several days and further ran up bills in plate charges (average $3.50 each). On rush jobs, someone would have to take the copy by bus.

But with the xerography units, Gerber now does all its own "platemaking." This is merely a matter of preparing an offset paper master—costing about 15¢ and taking only 3 min.

Grove says the equipment speedily proved it could shorten their reproduction tasks: "It quickly cut typing time, setup time, cost of plates, and delay on special jobs."

One of the special jobs is Gerber's standard-practice bulletin, which is circulated throughout the company. It had been a headache, Grove explains, because so much copy had to be fitted into limited space. Now, however, the copy is prepared on a standard typewriter and reduced to desired size by the camera unit.

"Where documents may be reused later," adds Grove, "we keep the masters on file. But almost invariably some revision is called for at the time of re-issue. In the old days, this would have required doing the whole piece over again. But today we simply paste the revised figures or phrases on a runoff copy, re-shoot it with the camera, and are all ready to print. Fast, last-minute changes or corrections can be made the same way on any job."

Meanwhile, the company's engineering department is making more and more use of the units. It has found that large sketches, working drawings, and other outsize items—formerly slow and costly to reproduce in volume—can be xerographically reduced to convenient size without loss of legibility. "And new applications," adds Grove, "are being found all the time." —*End*

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* **XEROGRAPHY** (Greek for "dry writing") is a fast electrostatic photo method. It utilizes a plate which, when positively charged and exposed in a camera unit to document to be copied, retains positive charge in areas shielded from light by document's type characters, drawn lines, or the like, while charge is drained away in exposed areas.

Latent image thus left is "developed" by cascading over plate a negatively charged black powder, which adheres only to areas retaining positive charge. Next, a positively charged paper is laid over plate and picks up negative powder—thus forming positive-image paper master. Finally, heating for a few seconds fuses powder to form permanent print. This paper master goes directly onto cylinder of duplicator for running off copies.

System components: Camera unit ('shoots' original); processor (makes paper master); fuser (heats to make permanent print); and duplicator. An additional special camera is used for making enlargements and reductions (see photo).

Plus-Profit by Air-Shipping

Sped from coast to coast overnight, produce wins premium prices for garden freshness and much longer shelf-life . . . New cargo box is factor

"PAUL BUNYAN BOX", developed by American Airlines, is filled "right from produce line" by West Coast shippers, then whisked directly to airport and flown east. Waterproof and tamperproof, it carries a ton of cargo.

FRESH-PRODUCE PEOPLE are now turning to modern airfreight—using it as a swift shortcut for delivering foods to distant institutional customers.

In speeding the garden-fresh products to far-off restaurant tables, they command premium prices. For thus they up shelf life by hurdling the slower, conventional distribution.

Pioneer of the new marketing procedure is American Airlines, which employs trained consultants.

These men audit food-company distribution costs, using a relatively simple questionnaire designed to indicate where savings can be made.

In checking on the specific potentials, efforts of the airfreight specialists have generally centered on the producers, since they usually determine the method of shipment. However, East Coast buyers are now rapidly taking a hand, too.

This has brought the airline to act as a "catalyzer" in promoting mutually beneficial meetings between volume producers and buyers, who have then gone on to make arrangements best suiting their individual requirements. Very often, airfreight, or a combination of air and surface transport, shows the way to greater profits.

American says it is now finding it difficult to meet the demand. Four of its DC-6A planes, each capable of lifting 30,000 lb. of cargo, nightly link western producers with prime eastern consumers. They bring produce of "just picked" quality—the A-1 condition offering longer shelf-life that reaps top prices.

To facilitate this trend to airfreight as an integral part of a company distribution system, American has developed the "Paul Bunyan Box" (see photo). A strong, castered aluminum container that holds a ton, it may be placed at the end of a food-plant production line to receive products.

Filled Bunyan Box is then directly sped by air to the consignee, riding separate from other shipments and always maintained at desired temperature.

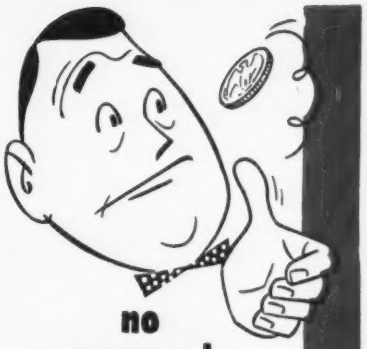
Shipper and customer may choose the respective means of pre-flight and post-flight movements of Bunyan Boxes, or other shipments. Thus, carriage to and from the airports may be by a concern's own trucks, common carriers, or the airline's own pickup service. Receivers are responsible for returning Bunyan Boxes to American.

Pre-cooled shipments of produce need no ice stops enroute, since they require only about a single day in transit. The arriving produce doesn't show signs of deterioration due to extended post-harvest delivery time.

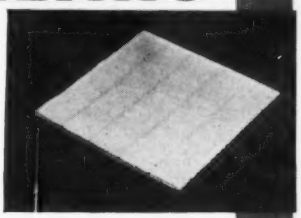
Thus, these goods have about nine days shelf-life remaining, rather than only some five. And consequently, says AA, they frequently bring prices running even 80% higher.

Imminent advent of the faster jet cargo planes will increase the airline's lift to some 400 million ton-miles. These new aircraft will shrink transcontinental shipping time by about 40%.

Thus, the enterprising food firms will be able to "jet" their products from Los Angeles to New York in only 4½ hr. —*End*



no guesswork with VICTOR BELTING



Who says *this* belting is *right* for handling your food products? We do . . . on the strength of operating tests conducted by our research department. Customers say so too, because of proven performance. Careful, continual checks of materials assure top workmanship and quality for extra-long life. Performance tests, with your products in mind, guarantee easy cleaning, no residual contamination, and no "belt-taste." That's why—with complete confidence—we recommend for *your* food handling:

VICTOR SUPRENE . . . special-woven cotton duck belting thoroughly impregnated with an exclusive Neoprene compound. Water-proof, highly resistant to grease and most food chemicals, smooth-surfaced, and easily cleaned.

VICTOR 475 . . . highest quality solid-woven cotton belting impregnated and coated with a special Neoprene compound. Developed for use where laboratory cleanliness is a must. Washable with hot water or steam. Resists rancidity and deterioration.

For food handling the modern sanitary way select from—
A COMPLETE LINE Including:

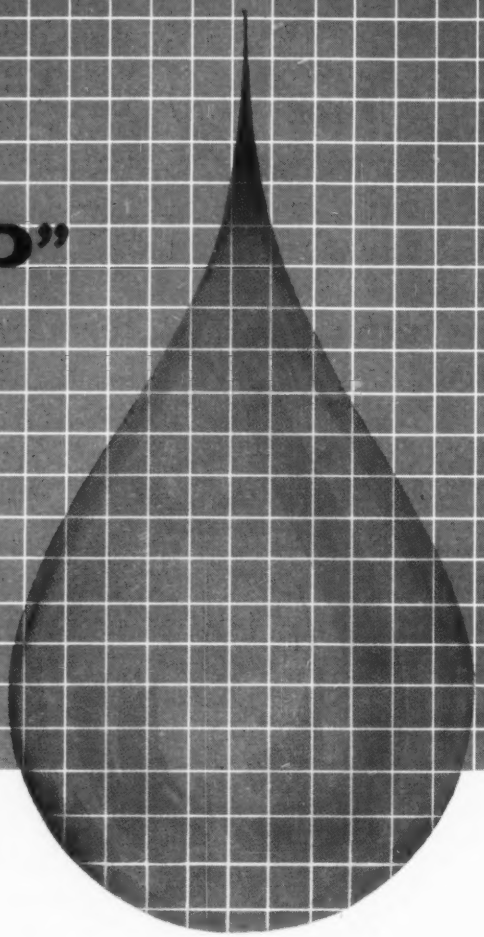
• Neoprene Belting • Balata Belting • Solid-Woven Belting — untreated, impregnated, coated — many widths and plies • Canvas Stitched Belting • Belting Specialties

3278

Victor Balata & Textile Belting Co.

53 Park Place, N. Y. 7
300-6 W. Hubbard St., Chicago 10

Here's what Flo-Sweet "R & D" means to you



New products through research are helping many companies set new sales records

Refined Syrups maintains a comprehensive research and development laboratory. This means Flo-Sweet is constantly improved, processes are kept up-to-date, and the significance and utility of new sugars are continually under study.

Flo-Sweet's liquid sugar system was the earliest form of bulk handling, preceding by many years today's trend to advanced materials handling of oils, flour, granulated sugars, fats, etc. Specialized knowledge gained through this pioneering makes it possible for Flo-Sweet to offer:

COMPLETE ENGINEERING SERVICE – Design and installation of customer receiving, storage, and distribution systems with built-in controls of meters, pumps, and valves for push-button operation.

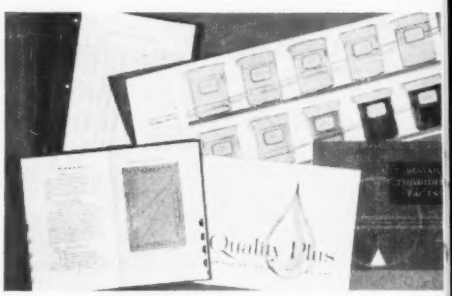
AUTOMATION – Coolers for bakers . . . heaters for fast and economical water removal . . . and specialized equipment designed by Flo-Sweet make possible continuous processing.

QUALITY IMPROVEMENTS – Removal of turbidity assures a truly neutral sweetener that safeguards flavor, aroma, and taste. Reduction of mineral content (ash) to .005% maximum and production of colorless liquid sugar, measures of sugar purity, are achievements of research.

NEW SWEETENERS – Flo-Sweet customers are enjoying the advantages of Sucrodex (sucrose-dextrose sugars), Inverdex (invert-dextrose sugars), and liquid sugar/corn syrup blends – a whole new family of sweeteners formulated to meet individual requirements.

In R&D, as well as in every phase of the company's service to industrial sugar users, Flo-Sweet resolves:

- **To help solve customers' problems.**
- **To offer products priced competitively and beyond reproach in quality.**
- **To earn the right to the continued confidence of sugar users, by keeping creatively alert to new developments.**



Flo-Sweet research has helped customers solve many problems. Factual reports, technical papers, illustrated brochures, and an authoritative handbook have been published to disseminate technical information widely.

REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

FLO-SWEET®

FIRST IN LIQUID SUGAR

How Handle Wage Garnishments?

Said Bert: "We like workers to feel we're ready to offer them a hand."

"THERE'S A PROBLEM that Bertram Barnastian wants to hear discussed," Ole Sage opened the G&Gers' monthly luncheon session. "Take it away, boss," he added, referring jokingly to his status as consultant to Bert's firm.

The senior partner of Barnastian Bros. Bakery Co. paused with embarrassment before explaining: "This matter seemed so minor that I hesitated to check Ole on it. But—I want to know: How should a company handle garnishments of its workers wages?"

While the waiters poured coffee, Ole asked the group: "How many of you consider it minor when employee wages are garnisheed?"

"A pain in the neck!" bellowed Batt Bulwark. "I see red when I think of the loan sharks and shysters involved. And I say that if your workers get mixed up with such crooks, fire 'em—on the spot!"

Barney Hasbrook commented judiciously: "My idea is that garnishments can be a mighty serious problem or no problem at all—depending on how the company has planned on handling or preventing them."

His tone troubled, Bert addressed Batt: "I can't quite 'buy' your idea. Not long ago, when we were only a small family-type organization, our few employees knew they could come to any of my brothers or myself about their problems. We've now expanded—have a bigger force producing our convenience foods—but we still like our workers to feel that we're sincerely interested in their welfare and are ready to offer a hand if they get into difficulties and start to sink."

"So how about it, Ole?" Milt Sorenson put in. "Have you got a less-surgical answer than Batt's 'Fire 'em on the spot'?"

Before Ole could reply, Barney shot another question: Garnishments aren't even legal in some states, are they?"

"Well, no, not in all states," Ole answered. "And in a few, garnishments are limited to taxes and/or debts for room and board. But in most states, you'll find that garnishments are legal."

He continued: "I have in mind a study made by the National Industrial Conference Board. As I recall it, about half the firms that replied handled settlements of wage garnishments without penalty to the employee."

"Softies!" Batt sneered. "Spare the rod, spoil the workers!"

"Well, Batt," said Ole, "among the companies that did administer a penalty, a very few indicated they followed your advice—discharging 'em 'on the spot.' Others, however, discharge only if garnishments become excessive.

"I'm depending on memory," he went on, "but it seems to me about a fifth of the penalizing companies discharge only after one or more warnings. Practices vary. Among them are: Immediate layoff. Warning, then layoff. Layoff until debt is paid. Six months' probation after the first offense. One garnishment permitted per year. And so on. A few stated that no fixed practice was observed."

"You've got to admit, Ole," bullied Batt, "that when a garnishment is slapped on, it's proof the worker is in debt and can't pay. Then, having it cut out of his wages is bound to cramp his living conditions. So he worries, and his work suffers. Right?"

At this moment, Zenith Canning's Ed Strong broke in: "I take it, Ole, that you *don't* consider it right to fire a worker if his wages are garnisheed."

"It's right in some instances," Ole said firmly. "But in others, no."

"Well, then," needled Batt, "when *is it* right to fire?"

"As you say," Ole observed, "a garnishment is almost certain evidence that the worker is in debt over his head. But the circumstances may have been beyond his control. He may have suffered losses by fire or theft, may have been sick or had an accident, may not have worked a long time. Such situations deserve the company's consideration."

"That's my feeling, too," Bert remarked. "That's why we're hunting around for a way to cope."

"Minimum policy," Ole stated, "would be to advise all new employees how you operate on such things—let them know in your company booklet what to expect. And if you haven't got a booklet, you can always provide newcomers with mimeographed sheets covering your rules."

"Can any other things be done?" queried Bert.

"Yes, several," Ole responded. "And important measures they can be. But either I'll have to go over them with you at your office, or take them up here next meeting. It's time to break up now."

"Let's continue here next meeting," suggested Ed Strong. I'm sure all of us would like to hear more on this." —*End*

IVAN C. MILLER
"Food Engineering"

SALES GETTERS: Here are four types of in-store aids that build product demand. Mass display of tuna can with eye-catching mobile pole promotes Star-Kist's new tuna label. Salad-time promotion pairs Heinz vinegar-Wesson oil, encourages retailer support by tie-in opportunities with other departments. Canada Dry generates consumer interest in Sweepstakes campaign with variety of eye-stoppers—display card carrying entry blanks, carton-top which also serves as single-bottle top, and bottle-top entry blank holder. Lenten theme (right) highlights seasonal promotion display of Carnation.

Tips on Displays That Pull Customers

With 5,000 products clamoring for shoppers' attention in today's supermarket, you need eye-catching point-of-purchase aids to make your package stand out . . . Here's an expert's advice on planning volume-building 'showcases' that retailers are sure to use

PRODUCT DISPLAYS that work for you and your retailers can be the most important part of your sales promotion program.

Unlike advertising media, space in retail stores can't be bought. It's awarded to those who produce displays which retailers think will sell for them.

You should start with your selling objective, and tie it in with your marketing plan. Then comes figuring on how to get the store space to accomplish these objectives.

When asking yourself what kind of display is ideal for selling a customer, go back to your product for the answers. Is the product useful? *You should show how it is useful.* Is it too small to get attention? *You must see that it commands attention.* Is it bought on impulse? *You should give impulse purchasers a chance to buy it.*

HOWARD M. TURNER JR.
D'Arcy Advertising Co.

Displays may fulfill sales objectives by featuring your sales message, carrying your brand name or advertising, presenting a special price or deal, or offering a premium or contest. Isolate the most important elements, and build around them. Avoid putting too many confusing elements into one showing.

The merging of selling objective and retail viewpoint calls for an intimate knowledge of the typical stores involved. Analyze the physical areas available for product layout to be sure you have a reasonable chance of getting your display used.

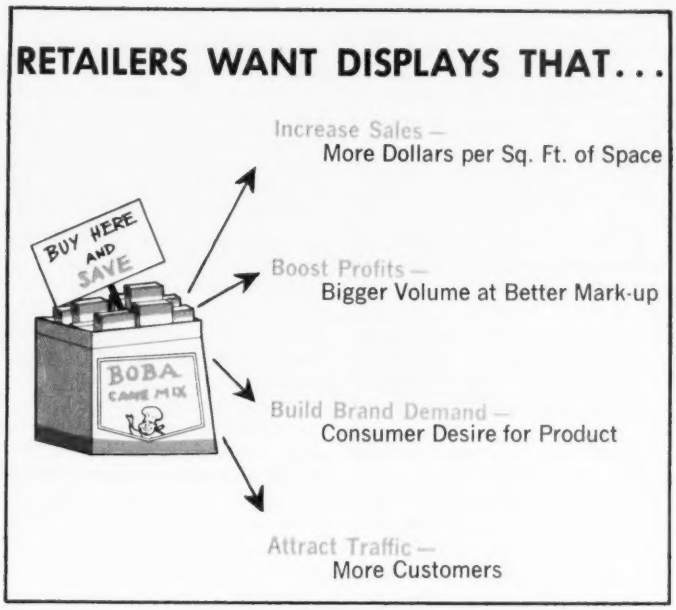
Packaging of food and related products for supermarkets has resulted in a merging of the display and packaging functions when products are sold through this type of outlet. This development contains important elements for anyone planning layouts.

First off, the package on the shelf must display itself. It must basically tell its entire sales story—what the product is, what it does, and why the consumer should buy it.

Then your product may further be dramatized by a setting which shows it off to advantage. Displaying product stock is effective because the merchandise is ready for the customer to select and buy. Another important technique — especially where your product is of relatively small importance to overall store volume—is to team it with related items.

Many companies often attach great emphasis to the follow-through of national advertising at the point-of-sale. There are two things to watch closely here—whether the display is in the form of the actual size of the advertisement or a blowup several times the actual size.

In the first place, the advertisement itself should adapt to a display naturally—the layout and copy



to Your Package

should be simple and uncomplicated. The message must be taken in at a glance—so an advertisement which is loaded with lots of reason-why copy and many separate pictures with captions will not do a good display job.

Second, the advertisement should ideally have some sort of product news or contain a special offer. This gives it importance at the retail level, making it a vehicle to get the consumer to buy.

Still another method is the special promotion—which can serve as the means by which you get the retailer to agree to put in your display as well as the way in which you get additional activity from them.

Don't Be Half-Hearted

Successful display programs keyed to the supermarket often embrace complete promotions. Says Myer B. Marcus, executive vice-president, Food Fair Stores:

"One of the best examples of such coordination between retailer and manufacturer was a recent campaign keyed to a popular TV children's program. Having decided to use a doll as a promotional device, the manufacturer sent representatives to contact all major food chains throughout the country for their opinions as to what other types of point-of-sale material could be handled in their particular markets.

"The items to be promoted included all the manufacturers' canned and frozen products. Plans were discussed to cover the frozen food and grocery departments. One doll was to be given with every 50 cases of merchandise, and these dolls were to be raffled off among the store's customers.

"The manufacturer supplied window streamers and 30x60-in. overhead wire banners carrying a minimum of copy. Also included were (1) thousands of entry blanks in pad forms: (2) display cards, according to the individual market request (11x 14-in. in size to fit our standard sign racks explaining the drawing); and (3) another 11x14-in. card telling the customer where to deposit the entry blank. This particular card was designed to fit the top of a carton in which entry blanks were to be dropped.

"The dolls and this promotional kit were delivered to our stores by salesmen who had previously contacted the store managers upon authization from our main office and had prepared them for the campaign. This was in addition to bulletins from our own sales department. With good material and the cooperation of the missionary men, the promotion was a great success."

Case the Joint

Study of retail store layouts can guide you in the opportunities for window, floor, counter, or wall display. Retailers themselves complain that the most frequent mistake made by manufacturers is that of neglecting the factor of retail store layout.

One of the best ways to insure point-of-sale devices getting into the store is to pack display material in with the product. This is done all sorts of ways—product is attached to the display, POS material is in the carton, or the carton itself helps to form the display.

In any point-of-sale program there are dangers of material being sent out which is never used. This waste factor can result in failure to meet sales objectives or in causing costs to get way out of line.

This problem was highlighted by Parlin Lillard, sales promotion manager of General Foods, in a speech before the Assn. of National Advertisers. Said he:

"We regularly ask our men to report on the use of this material.

"The best plan we have found for sending the right quantities to the field is to have our salesmen make an annual survey of each store they regularly call on. We have them check off on a card the most acceptable of eleven types of display material for the individual stores. This information is tabulated from a special IBM card. We use this information as a guide in allocating quantities.

"During the past year and a half we have audited our salesmens' daily reports, which give the actual use of specific pieces of material. As soon as each campaign was over, we checked these figures against the quantities of material (as reported on the IBM cards) which they originally had estimated they could use.

"These figures were remarkably close to each other. In fact, we have found their figures to be so accurate that we feel we can now relate this information to the right kinds and right types—according to what our men, experienced in the use of this material, tell us they can place in a campaign. Moreover, we now have a real yardstick for setting up the right quantities." (*Turn page*)

UNSTICK
stuck
BINS
with new
electro-permanent magnetic
ERIEZ
HI-VI
VIBRATORS

PAT. PEND.

Here's the newest and most efficient answer to those hard-to-move materials in sticky bins... designed to provide superior operating efficiency... exclusive pinpointed vibration gets right to the trouble spot – starts stubborn materials moving!

NO RECTIFIER NEEDED • COMPLETELY ENCLOSED HOUSING • GREATER VIBRATION IMPACT THAN COMPARABLE SIZE UNITS • RUGGED AND DURABLE • LOW FIRST COST • LOW OPERATING AND MAINTENANCE COST.

Special Mill Mutual ACCEPTED Units for HAZARDOUS DUSTY LOCATIONS

GET THE WHOLE STORY . . . WRITE TODAY.
Eriez Mfg. Co., 106-PA Magnet Dr., Erie, Pa.

ERIEZ

The methods GF uses to distribute material makes the salesman accountable for effective usage. Here are some other ways which have been used effectively:

Requiring an order from retailers. In many programs, and even where a free display is offered, an order from the retailer is required before the material is shipped. It must even be signed by the store manager (or buyer in some cases) in order to be validated. While this procedure is not an ironclad guarantee of getting your display used, at least the retailer had felt at the time that he could use it.

Window or department display contests. An effective device, especially as tied in with a specific promotion, is to offer prizes for the best use of the particular point-of-sale in retail stores. To qualify, the retailer or your salesman must submit pictures of the display. This prize plan serves to stimulate use of the material, even though many operators may not get around to submitting their pictures.

Use of professional window installers. If your product and distribution are adapted to the activities of professional window-installation services, this method is probably the most fool-proof of any for insuring that your display will be placed in a certain spot, in a certain way, at a certain time.

Who Should Handle?

A study of point-of-purchase programs by the Assn. of National Advertisers indicates through what channels display material is distributed. The most commonly used method, mentioned by 51% of 141 respondents, is to have material delivered to the stores by the company's own sales force. Of the other methods, 49% ship material to jobbers and wholesalers, 34% ship separately to retailers, 29% have deliveries made to wholesalers by their own sales force, 19% ship material with merchandise, and 17% use display-installation services.

This breakdown indicates the importance of continually working with field salesmen, because generally it is not practical to bypass the company salesman. He is the day-to-day contact, and wherever there is a good reason for a retailer to place your display, there is probably a good reason to place a competitive one. Your salesman makes the difference.

Since display material is valuable, many manufacturers charge for it, or offer it contingent upon orders for merchandise. If a retailer knows that his display has a value, he is more likely to use it—depending upon how much he paid for it, or on how much of an order he had to place to get it.

If you decide to charge, it is vital that the particular display offer a retailer as much or more than it gives to the manufacturer. Thus, it is one thing to charge for a selling fixture, but entirely different to charge for a brand-name sign or other piece of purely advertising material.

Here you are usually faced with alternatives which can be worked out on a practical basis. Suppose that a display unit costs $15, and that there are 10,000 retailers who might place it. You can set up your own budget against selling costs on the basis that if you charge nothing and base the display on a certain order for merchandise, your estimated distribution would be 6,000 displays at a cost of $90,000.

If you charge $5, estimated distribution might come to 3,000 at a net cost of $10 per unit, or $30,000. And if you charge $10, estimated distribution might be 1,000 at a net cost of $5 per unit, or $5,000.

The decision as to how much to charge would usually be reached on the basis of a percentage of estimated sales that might be produced by the display. Into this decision would enter the factor of the type and size of the retailer who would use the display under each set of circumstances in order to reach a reasonable estimate of total sales potential.

The above article is from a chapter in the author's book, "Sales Promotion That Gets Results," to be published this month (copyright 1959) by the McGraw-Hill Book Co.

"This is just in case you know more about it than the instructor."

Plugs Up Drains on Profits

Here's a cost-tracking system that makes it easier to find marketing weak-spots

ASK ANY executive to name the best way to improve marketing efficiency and invariably his answer is, "Controlling costs."

Hence, the growing interest in "distribution cost analysis" to ferret out those profit-dragging parts of the marketing program—and point the way to corrective action. Supporters of the accounting method contend that it can help to promote marketing efficiency much the same way that factory cost accounting helps management to control in-plant production costs.

How you can fit a DCA program into your operation was detailed by Thomas J. McGann, Marquette U., at the recent American Marketing Assn. conference in Chicago.

If marketing charges are a substantial part of your total costs, McGann stresses, you should make DCA a permanent program. "Your most pertinent measurements, such as product-line or territorial profitability, should be taken at regular intervals," he says. Furthermore, constant evaluations are dictated by the competition.

Personnel needed to carry out the program is determined by company size. "In a large outfit, two or three people may be required," McGann advises. "In a medium-size firm, only one person. And in a small company, existing personnel, through duty reassignment, can do the job."

Additional expense involved is primarily for payroll and tabulating machines. Bigger outfits usually have such equipment, so their added cost will be payroll. Smaller firms that lack the hardware can farm the work out to a service bureau.

McGann cautions that the type of statement that you ask your accountants to prepare should be kept simple at first. "We've found it best to advise clients to limit statements to the most pertinent type, such as product-line profitability," he says. "This gives an opportunity to concentrate on the mechanics, and assure accuracy.

"It's also desirable to keep measurement areas narrow at the beginning. Thus, a product-line statement would gage profitability of families of products rather than individual products. Later, family groupings may be divided, as needed, into individual items."

Allocation of costs will be the most controversial element, McGann concedes, mainly because the classifications are functional in nature. Instead of showing costs in terms of rent, wages, etc., DCA illustrates them according to the function for which they are incurred—such as, Outside-Selling, Order-Processing, or Credit-Authorization.

This problem can be minimized, it is pointed out, through formation of a cost committee—made up of the accountant who will prepare the figures and the managers of sales, marketing, warehousing, and personnel—which will set up criteria for allocating the costs to the separate marketing activities. Such a committee, McGann insists, sustains organizational relationships, speeds acceptance of figures, and encourages greater cost-and-profit awareness.

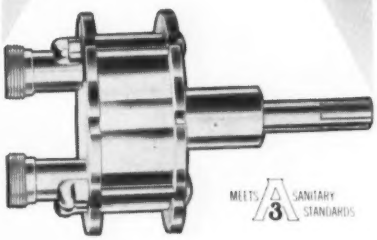
—FE Staff

Statement of Product-Line Profitability (% of sales)

	Total	Prod. 1	Prod. 2
Sales	100.00	100.00	100.00
Cost of sales	76.88	76.04	88.47
Gross profit	23.12	23.96	11.53
Product costs:			
Purchasing	.15	.15	.14
Order-processing	.69	.41	1.68
Machine-processing	6.47	7.69	
Materials handling	.69	.33	.71
Delivery	2.53	1.91	4.86
Inventory	.59	.31	1.19
Total	11.12	10.80	8.58
Profit after product costs	12.00	13.16	2.95
Customer costs:			
Advertising	.02	.02	.02
Selling	3.08	3.45	1.27
Total	3.10	3.47	1.29
Profit after customer costs	8.90	9.69	1.66
General costs:			
General administrative	1.55	1.53	1.67
Accounting	.68	.67	.74
Total	2.23	2.20	2.41
Net profit before taxes	6.67	7.49	(.75)

COMPARING functional costs of each product with overall company results (as in this mythical sample) uncovers Product No. 2 as loss-source.

Need a
FOOD
PUMP
IN 20-35-50-90 GPM SIZES



THERE IS A VIKING "SANITOR" FOR YOU

You'll find the Viking "Sanitor" is engineered to handle your liquid or semi-liquid food products efficiently. Because of the varity of sizes, there is a "Sanitor" to fit almost any installation. Both unmounted and complete units . . . including variable direct and V-belt drives are available.

In performance, the "Sanitor" is famous for slow speed and smooth, non-foaming, non-agitating action. Take-down requires no tools. All parts are polished for easy cleaning. For more detailed information, send for Catalog FE.

VIKING PUMP CO.

CEDAR FALLS, IOWA, U.S.A.

In Canada, it's "ROTO-KING" pumps

Offices and Distributors in Principal Cities
See Your Classified Telephone Directory

Circle 274 on Reader Service Card

IN CORROSION RESISTANT PROCESSING EQUIPMENT

Style A Kettle
⅓ Jacketed, 5 to 500 gal.

Style CW Kettle
⅓ Jacketed,
80 to 300 gal.

Style B Kettle
Full Jacketed, 10 to 300 gal.

Style CW3T Kettle
with Center-Line Scraper
Agitator, 80 to 300 gal.

The Name for
Quality is
LEE

Style C Kettle
⅓ Jacketed,
5 to 100 gal.

Pressure Kettle
⅓ Jacketed,
40 to 200 gal.

Storage Tank
100 to
5,000 gal.

Pulp Tank
500 to 2,000 gal.

Vacuum Pan
10 to 500 gal.

Quick Cooling
Pan
50 to 200 gal.

SPECIAL DESIGNS
Interested in modifications of standard units or custom-designed equipment? Our facilities are such that we can make any special designed units you may require. Write us.

WRITE for bulletins on any of the products illustrated.

LEE
METAL PRODUCTS
COMPANY, INC.
A.S.M.E.
CODE CONSTRUCTION

Kettles, Plain and Jacketed | Tanks, Processing and Storage | Agitators and Accessories | Vacuum and Pressure Equipment

416 PINE STREET, PHILIPSBURG, PA.

CONTAINERS are fitted with retractable legs to enable easy transfer from trailer to delivery chassis.

Portable Depots

—eliminate costly branches, cut distribution costs

EXTENDING MARKETING horizons without branch warehouses, speeding delivery, and integrating transportation systems are among benefits claimed for a new "piggyback" system employing special devices.

Two kits carry the equipment (Morhaul, Moore-Hadley Hardware Co., Birmingham, Ala.). One contains 4 legs with counter balance mechanisms to be installed on a truck body or large container. Other kit comprises a hydraulic lift to be fastened to truck or trailer chassis.

Case History Details Value

Here's how one user—Sealtest, Kalamazoo, Mich.—employs the system to eliminate unloading of transports and loading of ice cream delivery trucks.

Plant serves 10 areas in central and western Michigan. It has 20 Morhaul-equipped refrigerated containers; 2 transport trains consisting of lift-fitted trucks and 4-wheel trailers, and 10 local delivery chassis equipped with lifts.

Refrigerated containers are loaded at central plant with about 2,500 gal. of ice cream. Transport trains (made up of two containers) move to various cities in the area, dropping containers at filling stations, where their standby refrigeration equipment is hooked to electric outlets.

Later, a local route man, driving a lift-equipped chassis, picks up the full container for store-door delivery. Meantime, the transport exchanges containers at another city and returns to Kalamazoo. —*End*

CASE HISTORY OF MONTH

From files of *National Consumer Panel Division of Market Research Corp. of America.* Material is factually correct. Identities of product and companies have been masked to insure anonymity.—The Editors

Do Price Cuts Pay Off?

Management's problem

OUR OVERRIDING OBJECTIVE is to improve our position against powerful competing brands (including many chain labels) in our product category. With this in mind, we offered our brand to the trade at a substantially reduced price for a limited period.

As a result of this trade deal, the average price consumers paid for our product dropped about 22%, and our share-of-market increased sizably. Even though the impact of the temporary offer on price and volume was largely dissipated after about two months, the short-term spurt almost doubled our nationwide market share for the quarter.

Our problem was to determine, for planning purposes, the net effect of the price reduction. We were especially interested in pinpointing the sales changes in different types of retail outlets—major chains, leading regional chains, other chains, and independent stores.

What Would You Do?

Management's decision

The answer lay in examination of purchase records of families in the National Consumer Panel. These indicated that our greatest gains occurred in independent outlets and smaller chains. Advances in the large national and regional chains were considerably smaller.

The reason for this disparity was also evident in the consumer purchase records. Our price reduction had been fully reflected in the retail prices of the stores where we made significant gains. But there had been little or no price declines in outlets where our progress was minor.

Analysis made it clear that the chains which had failed to lower their shelf prices on our brand were the ones with their own private labels.

Result of action

The trade deal did not enable us to make much headway in large chain organizations, because they were apparently unwilling to sell our brand at the same level as their own private labels. Thus, the independents and non-private label chains had sold our brand at a lower price.

The conclusion, therefore, was that this form of merchandising would produce only limited success for a company in our position. It would not improve our competitive standing in the outlets where improvement was needed most.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 West 42nd St., New York 36, N. Y. Your inquiry will be directed to the source of the case-history item.

for every FOOD INDUSTRY's NEED

You can depend on

DARNELL CASTERS AND WHEELS

for quality, performance and service

RUBBER TREADS . . . a wide choice of treads suited to all types of floors, including Darnelloprene oil, water and chemical-resistant treads, make Darnell Casters and Wheels highly adapted to rough usage.

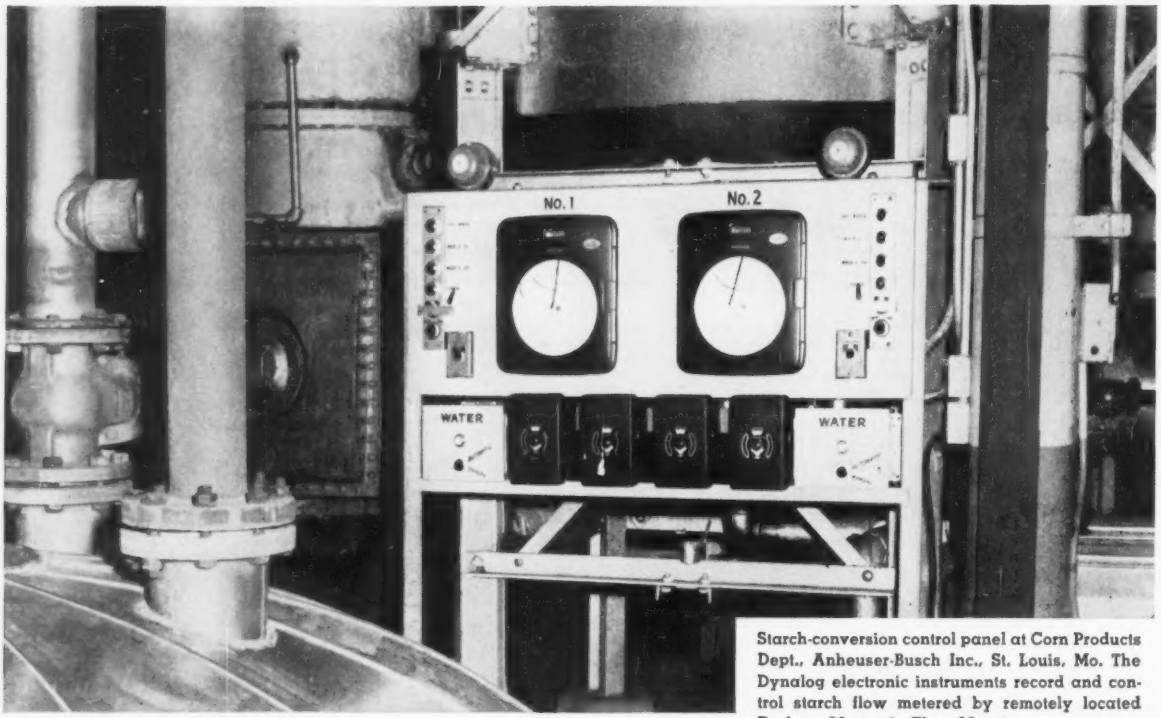
RUST-PROOFED . . . by zinc plating, Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.

LUBRICATION . . . all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Quick grease-gun lubrication provides easy maintenance.

STRING GUARDS . . . Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

Send for FREE Darnell Manual

DARNELL CORPORATION, LTD.
DOWNEY (LOS ANGELES COUNTY) CALIFORNIA
37-28 SIXTY-FIRST ST., WOODSIDE 77, L. I., N. Y.
36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS



Starch-conversion control panel at Corn Products Dept., Anheuser-Busch Inc., St. Louis, Mo. The Dynalog electronic instruments record and control starch flow metered by remotely located Foxboro Magnetic Flow Meters.

ANHEUSER-BUSCH CUTS NEW EQUIPMENT COSTS — IMPROVES STARCH CONVERSION

with Foxboro Magnetic Flow Meters

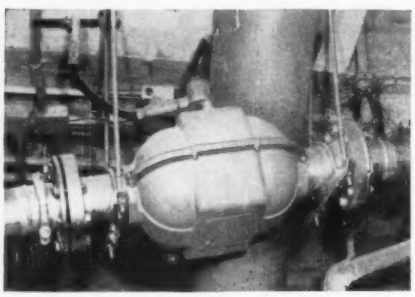
Starch slurry measuring tanks for corn syrup production had to be replaced at the Corn Products Department, Anheuser-Busch Inc., St. Louis, Missouri. Wanted was a more automatic system that could meter slurry direct from storage to starch converter — eliminate visual tank-measuring techniques.

Foxboro Magnetic Flow Meters proved the perfect answer, and at an installed cost considerably below that estimated for replacing tanks. Starch slurry, with 43.5% solids, flows right through the meter because this unique Foxboro instrument has no flow restrictions. Measurement is made by electrodes flush-mounted in meter wall — recording by a remote Dynalog* Electronic recorder.

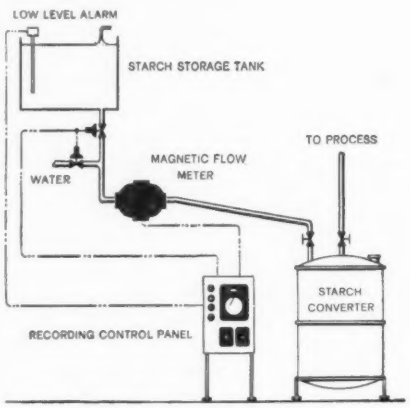
Anheuser-Busch engineers credit their Magnetic Meters with better than ±½% accuracy, consistent repeatability. They also report the meters are unaffected by changes in slurry density, temperature, pressure, viscosity, or chemical composition.

For liquids as viscous as starch slurry, or as free-flowing as water, Foxboro Magnetic Flow Meters have a proven record of accurate, trouble-free performance. Get the complete story in Bulletin 20-14C. **The Foxboro Company, 302 Neponset Ave., Foxboro, Mass.**

Reg. U.S. Pat. Off.



Foxboro Magnetic Flow Meter (above) is one of two installed by Anheuser-Busch to replace batch measuring tank system. Meters provide measurement of starch slurry with better than ±½% accuracy. Diagram for one of the systems is shown below.



FOXBORO
REG. U.S. PAT. OFF.
MAGNETIC FLOW METERS

Bigger Job Ahead for Marketing

You can expect the marketing concept to cover a far wider area of business operations as time goes along. Here are two signposts that point the way:

An American Management Assn. study, *Marketing Research Organization and Operation*, finds that in 17 out of 123 firms the marketing research director reports to non-sales executives (four of whom operate in the financial area). Suggests AMA: These firms "may be using market research as a *control tool* for evaluating the whole sales or marketing activity of the business . . . and reporting these facts to a financial officer."

Robert J. Keith, Pillsbury's executive v.-p, told an American Marketing Assn. conference that as companies become more customer-centered their marketing departments will exert greater influence on long-range policy. "Tomorrow's marketing men," he says, "must know capital and financial planning, 10-yr. volume and profit goals, and the implications of marketing planning on long-range profit forecasting."

Do Holiday Wraps Pay?

"Reward foods—cookies, cakes, candy, soft drinks, and beer—are more suitable psychologically for gift wrappings than other types because they are oral symbols of love and togetherness, qualities which are particularly acceptable during the holidays." So concludes William Schlackman, packaging director, Institute for Motivational Research, in a statement to FE summarizing his findings of a recent field research project.

If you're planning any gift packaging this year, Schlackman urges that your holiday package: (1) Occupy no more space than your ordinary container does, (2) not be too easily removable, and (3) not represent extra work for the retailer.

"Togetherness" for Better Brand Image

Taking its cue from a successful magazine promotion, Armour will pitch its advertising this year on a "togetherness" theme. Aim is to achieve greater brand unity among its diverse product roster.

A recipe file card will be used as a familiar food symbol to link all company advertising. In newspaper and magazine ads, upper tab of the recipe design will provide a frame for brand name, and TV commercials will open with a closeup of the recipe file tab as it appears in print ads.

Mammoth Food Promotion Shapes Up

Encouraged by the success of last year's "You Auto Buy Now" campaign, the newspaper industry is readying a similar big-ticket campaign around the food industry with the theme of "Better Meals Build Better Families." Slated for a two-week period in September, the drive is being engineered by American Newspaper Publishers Assn.'s Bureau of Advertising, and is expected to get support from 700 to 1,000 dailies.

All of the leading food chains have indicated they plan active anticipation. In fact, trade sources note that retailer enthusiasm is so strong that unless food manufacturers (now being contacted) counter with some strong support of their own, the promotion can end up as a big blast for private labels.

No Slack in Family Income Uptrend

An important factor in post-war growth of convenience foods has been the steady rise in family income. A new Commerce Dept. study indicates that this upswing may even pick up some momentum in the next decade—meaning bigger selling targets for you.

The Department's Office of Business Economics estimates that before-tax average income of non-farm families (the big food spenders) may climb from $7,600 in '60 (vs. $7,150 in '56) to $9,300 in '70—for a walloping 24% jump. Compared to that, average before-tax income of all U. S. families gained only 19% (from $5,120 to $6,130) in the lush '47-'57 period.

BRIEFS

Need for shrewder ad spending is highlighted in Assn. of National Advertisers' report that magazine page rates climbed 97% between '46 and '57.

Revised policy on trade and consumer deals now allows General Foods customers to subtract cash discounts from gross amount on invoice before deduction of allowances.

No slowdown in new product pace: Pillsbury, which debuted 19 new items in fiscal '58, "will continue at that rate or even faster," Pres. Gerot says.

Put the food page editor on your team: Recent survey found that 83% of housewives clipped or copied recipes from newspapers.

Canned goods labels must now include the word "net", preceding quantity declaration, when sold in New Jersey and Pennsylvania. But state officials will let canners use up present label stocks.

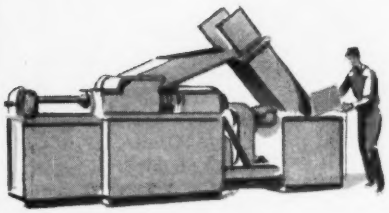
Increased numbers of working mothers calls for more recipes slanted to teen-agers. Check of 9,000 New Jersey high school juniors and seniors shows that four out of five generally prepare their own breakfasts.

In reaching for the ultimate in convenience, food firms must not forget that their products should taste good as well as be easy to use, warns Nestle Pres. Hans J. Wolflisberg.

Pabst's comeback campaign seems to be paying off. Firm says its Blatz brand upped sales 36% in '58, while overall brewery volume dipped 1%, to 83.5 million barrels.

Food Makers Solve Unusual Problems with VOTATOR Continuous Processing

Big production problems often grow from seemingly unimportant oddities. Such was the big road block to production packaging of whipped spreads. Whipped butter or margarine expands or "grows" *after* the print is formed. No available wrapping equipment could handle it. The VOTATOR print-forming and wrapping unit in this complete VOTATOR continuous processing system does a perfect job because it was designed to do it.

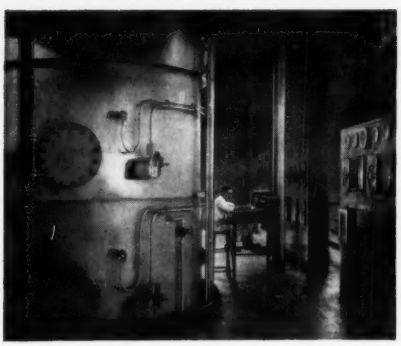


So often, the way to profits in mass marketing is only through faster, lower-cost processing and packaging. Here's an example: A maker of whipped spreads faced production problems because the whipping expanded a pound of butter or margarine from four sticks to six sticks (50% increase in volume.) The usual forming and wrapping equipment couldn't handle it. Costs soared when much of the work had to be done by hand. But VOTATOR equipment designed for the job soon provided the answer. Now a compact integrated closed VOTATOR system not only whips the spread under precise control *safe* from contamination, but packages the expanding product with continuous mass production speed and profit-making economy.

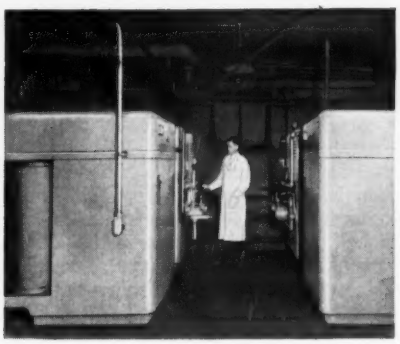
Your production problems may not be those of the whipped-spread manufacturers. But this VOTATOR achievement once again demonstrates that the short cut to continuous processing for rock-bottom costs is via VOTATOR experience and facilities. VOTATOR'S technical staff is ready to work with you. Write today for information on your specific processing problems or requirements.

GIRDLER PROCESS EQUIPMENT DIVISION
CHEMETRON CORPORATION
Louisville 1, Kentucky
New York • Chicago • San Francisco • Marietta, Ga.

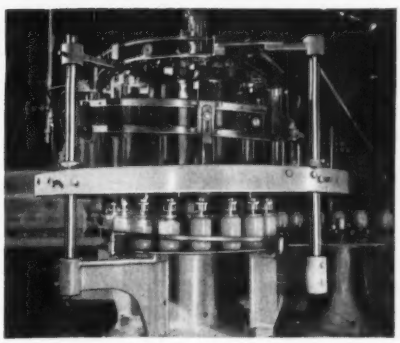
CHEMETRON



VOTATOR Deodorizers provide flexibility in the automatic processing of a variety of feed stocks and assure highest product acceptance.



In chilling and plasticizing lard, VOTATOR continuous processing produces a whiter product with exceptional market appeal.



The economies gained by close-tolerance filling of viscous materials at new high speeds pay for this advanced VOTATOR filling equipment.

VOTATOR Reg. U. S. Pat. Off.

FASTER HANDLING: Tray-pack method enables clerk to stock two casefuls at a time rather than just two handfuls. System also speeds stock removal for repricing and rotating of packages.

DESIGN CHALLENGE posed by using shipping cases for shelf-display is met by new Budweiser cartons that stress product and brand names boldly on side panel.

Now—Shelf-Display Shipping Cases

With retailers pressing for store-oriented packages, Jewel's "tray-packs", which convert cartons to shelf merchandising, hold significance for you . . . Brewer shows one way to get benefits

WILL TOMORROW's food store call for shipping cartons that double as package merchandisers right at the point-of-sale?

That's what alert food marketers are asking themselves as the result of a radical attack on in-store handling costs by the nation's No. 1 brewer and 11th ranking retail food chain.

Working independently toward the same goal, Anheuser-Busch, St. Louis, and Jewel Tea, Chicago, hit upon the idea of using the bottom half of the shipper as a shelf-display unit for consumer packages (see photos).

This idea has been used on a limited scale in the past for stack-up displays, but now its full-scale extension to store shelves holds special implications for your future package planning.

Budweiser's innovation, which the firm calls its "suitcase" design, was developed to go along with a bulk-can receiving system and an end-loading cartoner that will be installed in A-B's new Tampa brewery. Initially, an end-opening case was sought. But when a limited market survey disclosed retailer objections to this, company came up with a top-opening carton that facilitates price marking and also lends itself to mass displays and supermarket merchandising.

Special significance of the case, according to N. D. Ellis, package engineering manager, is that the design is a natural for can packers in other food branches where fully automated production lines are being considered. And, he adds, it's advantageous for prepared mix makers and others who have a problem with inner cartons that are torn by store clerks when the shipping case is opened with a knife.

Jewell's variation, labeled the "tray pack" method, boosted over-all employee efficiency 18% in a test store where converted cartons were introduced to about 40% of shelf space, says Fred A. Woerthwein, store development manager.

Economics stem primarily from handling large amounts (12, 24, 48, or 72 packages) at one time as trayloads, rather than tediously moving the few units that the hands can hold. This saves labor in shelf stocking, speeds stock removal from shelves for repricing, and facilitates rotating of stock.

A major transformation in store appearance and operations would result if Jewel's concept sweeps the markets. This would call for a radical redesign of your shipping cases to make them effective merchandisers, as well as alteration of package design so that important copy wouldn't be hidden by the tray lip.

"We estimate 85% of our shelves can be stocked with tray packs," says Woerthwein. "To realize anything near full potential requires changes in most shipping containers, ranging from printing revisions to use of tear-tape openings.

"Just working with present shipping cases—most of them not designed for tray-pack use—we can make significant savings. Handling potential could be doubled by tear-tape devices. And sales potential can be multiplied if manufacturers treat lips of the tray as an important new point-of-sale weapon. Adoption of continuous-design labels for cans, jars, and bottles would assure a 'selling face' always being exposed."

EASY-OPEN feature of Budweiser's 'suitcase' shipper is achieved by scoring center of rear panel and slitting inner flaps during carton manufacture.

Moving fast to make tray-pack converts, Jewel is adopting the idea for all stack-up displays and plans to expand it to shelf-stocking beyond the first four "pilot" stores. The chain is also sharing test results with other retailers to broaden demand for the idea. Other developments:

Specific case-design changes, which promise quick returns, are being requested of certain food processors by Jewel.

Further, two packaging suppliers, Chicago Printed String Co. (tear tapes) and Stone Container Corp. (corrugated boxes), have set up special projects to explore possibilities.

In-Store Benefits

Jewel's store-test, according to J. W. Parker, industrial engineer, showed these benefits:

- ▶33% more cases stocked on shelves per hour.
- ▶18% cut in cost of price-changing labor.
- ▶33% fewer man-hours to clean shelves.
- ▶17% less time to rotate dated food products.
- ▶80% reduction in losses due to dropped glass containers (largely credited to tray's retaining rim). Risk of customer injury is minimized and floor cleanup lessened. (Much of the former breakage occurred in baby foods, stacked on sides for gravity feed. Removal of one jar at a time often caused a crashing of several.)
- ▶8% speedier handling of empty shipping containers.

So far, the testing has mainly centered on cases containing jars and cans, which cannot be seriously damaged if the tray-cutting knife penetrates too far. Emphasis, too, has been on faster-moving items, especially the two-cases-per-week sellers.

Jewel executives say benefits will multiply if big volume items like cake mixes, cereals, soap powders, and gelatins are case-packed with tear-tape opening. Tray-cutting is discouraged. For considering the small margins, gouging of only one cake mix box cancels profit for the whole case.

Your Own Design

Merchandising impact of your own tray packs can be dramatically enhanced. Stone Container Corp. has printed specially designed sample trays to illustrate this.

An attractive, printed color band, properly located, brightens the tray pack and shelf sections, and furnishes product identity. Tray pack signs could be functional, Jewel points out, for varieties and flavors in such multiple-choice departments as baby foods, cake mixes, soups, and gelatins.

"It's hard to read the labels on small baby food jars," Parker explains. "But with inch-high lettering (or bigger) on the front of a tray, the busy shopper would easily find what she wants."

Jewel has already persuaded a major soup maker to print the individual variety name around both top and bottom of two-tier cases so as to make printed trays for both tiers.

Variety identification can be preprinted at the box factory for large runs. And for short runs, lettering can be roller stamped at conveyors in the processor's packing department. Special promotion messages can be printed on the tray face.

Printing of a color block or dotted lines can serve as a tray-cutting guide for stock men. This would help achieve straight edges and uniform heights of tray lips, making for more attractive shelf sections.

Changes in case dimensions are being sought to take best advantage of tray-pack stocking. Example: Baby foods, with their multiplicity of varieties, could be effectively and adequately displayed if cases were packed in 3 rows of 8 jars instead of 4 by 6, it is contended.

More study is needed by both manufacturers and retailers on relation of tray size to turnover.

Jewel keeps hitting on surprises. A new way to change price marks was found, and two men ran through 960 cans in 10 min. It's done by simply wheeling the whole bunch of cases to the backroom, spreading them out on the conveyor, and then removing the old figures and stamping on the new ones. Old way took about 30 min.

Another instance of tray-handling efficiency is the building of a display stack of 1,000 lb. of coffee in 2½ min. as against 20 min. doing it can-by-can.

Woerthwein says of the tray pack's future: "We feel that the first manufacturers will get the edge that comes with leadership in any merchandising advance. We think the advantage would be such that others would soon follow suit. In a few years, package-by-package handling could become obsolete."

Annheuser-Busch's suitcase type carton features clay-filled cambric gummed tape in place of the convential sisal or kraft tape. This is done, says Ellis, to provide sufficient strength for the tape's use as a tear-strip. The special tape is also cheaper, he adds, and requires less pull-effort to tear through the board.

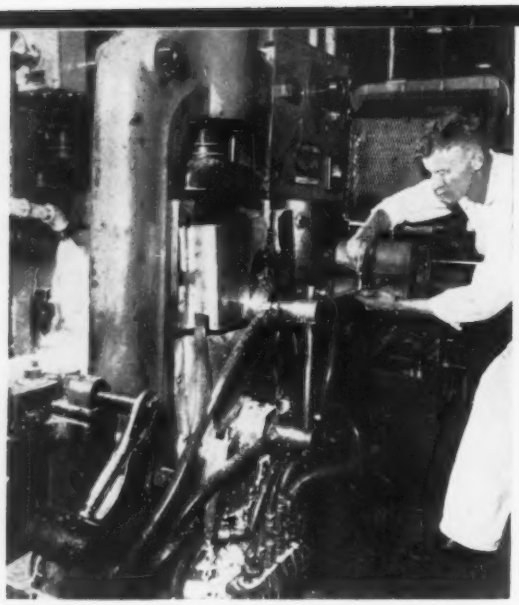
By use of a special printing ink that resists adhesion to the gummed tape, a rectangular area is printed at the upper righthand corner of the carton's side directly under the tape. This enables the store handler to readily pick up and tear off the tape.

Pulling the tape off allows the container to open like a suitcase. To make this possible, carton design is such that the inner flaps are slit in the middle during carton manufacture, and the center of the rear panel is scored to form a hinge.

The case is made from a rectangular piece of corrugated board with no waste, says Ellis. It uses 22% less corrugated paper than the conventional top-opening beer case, which means big savings for the brewer.

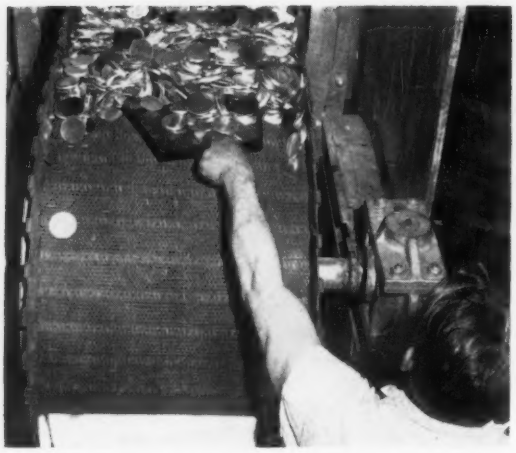
Ellis feels that retailers will go for the suitcase-carton because it reduces labor costs through ease of opening, rapid price marking, ready accessibility of contents, and ease with which floor displays can be built without removal of the contents.

The Uniform Classification Committee has cleared the case for use in rail shipments in interstate commerce. Although A-B does not intend to restrict use of the design, it has applied for patents for its own protection, Ellis says. —*FE Staff*



CONTINUOUSLY-CAST strip is cooled, rolled to final thickness before being fed to blanking press (above) that stamps out 66,000 slugs an hour.

Here's 'How' of



DISKS GO through 1½-hr. trip in annealing furnace, where they're softened to desired level. Conveyor then carries them to . . .

Economical Aluminum Can

Cost differential vs. tinplate shaved by automatic ingot-to-slug conversion for impact extrusion method . . . Advance paves way for straight-through packaging line in food plants

COMPETITION BETWEEN aluminum and tinplate containers took a dramatic turn last month when Adolph Coors Co., Denver, began market testing draught beer in a 7-oz. can made from the light metal.

The result of a 4-yr. research project, the achievement has these striking implications for the food industry: An aluminum-canned product whose price is directly competitive with that of the tinplate version, development of a completely automatic straight-through process from ingot-casting to case-packing, and a strong claim for impact extrusion as the most economical method of forming aluminum cans.

The brewer says his 8-pack of 7-oz. aluminum cans will retail for 95¢. But a 1¢ refund on returned cans (to be picked up by Coors' own trucks at retail stores where empties are turned in) cuts the consumer's net price to 87¢. Coors standard 6-pack of 12-oz. tin cans sells for $1.08. So by simple arithmetic the aluminum can comes to .0155 per oz. of product vs. .0150 for tinplate.

Up to now, experimental food packs in the miracle metal have carried an extra surcharge (FE Nov. '58, p. 66). But elimination of the price spread (in this instance) promises sharper competition between the two metals in '59. And it certainly strengthens the stand of those who lean to impact extrusion method of can-forming.

How was Coors able to pull the price down?

Key to the trick, according to company engineers, was perfection of an automatic process for converting aluminum ingot into slugs for impact extrusion by continuous strip casting, rolling, and blanking out. The process, they add, puts a control on conversion costs and is the essential part of the economic manufacture of aluminum cans.

In fact, officials claim, cost of making aluminum cans is the same as what Coors pays for tin containers. But, the company cautions: "The aluminum can in its present stage can be reasonably competitive with tinplate only if a food or beverage processor is willing to make his own cans."

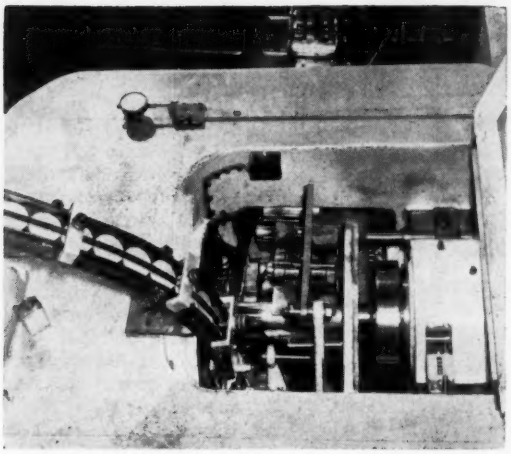
Coors estimates that equipment for a 100/min. can-making line—including 4-color lithography and internal coating—would cost a food manufacturer around $150,000. For a plain can with wraparound label, it would be $100,000. Installation costs are extra.

Break-even point for such a line is placed by Coors at between 75,000 and 100,000 cans daily. Based on a five day week, the annual rate comes out to between 19.5 and 26 million cans—which, interestingly enough, is the same break-even point Kaiser Aluminum estimates for drawn-type aluminum cans.

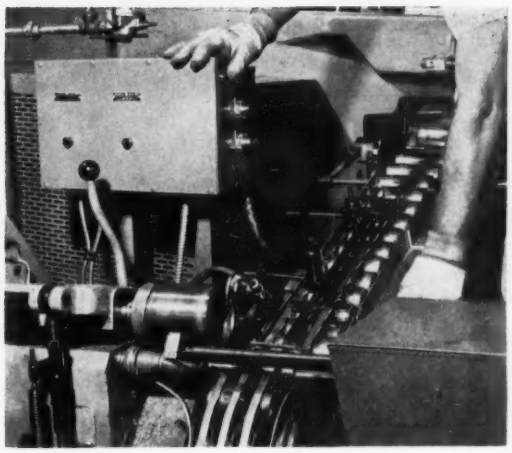
The pace-setting production line is the result of an extensive research program carried out by Coors since '54. To help push the project

FRANK PITMAN
McGraw-Hill News, Denver

Automatic Aluminum Can-Making



. . . **IMPACT EXTRUSION** press that stamps out 3,600 flat-bottom, seamless cans per hour. Two such machines are in use at Coors.



CAN BODIES are trimmed to desired length and flanged to receive lids, which are also made at plant.

Narrows Price Spread

through, the company joined with Beatrice Foods (which had also been exploring aluminum-can possibilities) to form Aluminum International, and built a special plant to design and develop machinery. Out of this venture came several production firsts —including a casting wheel to control the variables of converting ingot, and a lithographing unit that decorates four cans at a time.

As the result of its experimental work and the equipment it has on hand, Coors will make aluminum slugs (and lids) for end users. It is already shipping disks to Hawaii Brewing, Honolulu (FE Sept. '58, p. 82), and three metalworking outfits.

Coors' can-making process begins with melting of 50-lb. pig ingots (more than 99.5% pure) in a 1,300 F. electric furnace. Molten metal then goes through the special casting wheel, which produces a continuous aluminum strip ($\frac{1}{4}$-in. thick, 4 to 8 in. wide) at speeds up to 4,000 lb./hr.

Next, the strip is reduced in a hot mill, then cooled and rolled to the desired gage in a cold mill. It's then fed automatically to a blanking press, which stamps out slugs ($2\frac{53}{64}$-in. dia., $\frac{1}{8}$-in. thick for 7-oz. cans) at a maximum rate of 3,000 lb./hr. —roughly equivalent to 66,000 cans. Blanking scrap is returned to melting furnace, thus eliminating waste.

Stamped-out slugs are softened in an annealing furnace, then washed, deburred, and lubricated.

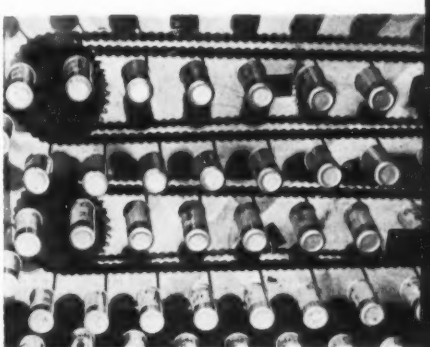
Actual can-forming begins with two German-made impact extrusion presses (Harlan) that were redesigned at the Coors plant for faster American line speeds. Each press extrudes 3,600 flat-bottomed, seamless cans per hour by hitting the thin disk in a die with a hardened steel punch that's powered by 400 tons of pressure. Can bodies are trimmed to length and flanged, degreased, mildly etched, and rinsed.

Lithographing, the next step, is done on a 4-color cylindrical press (Alfons Mall, Germany) that was remodeled by Coors to print 4 cans at a time—or 120/min. Brewer's engineers revised the drive and mixing unit, and installed four synthetic rubber blankets instead of the usual one.

After inking, magnesium plates with engraved design transfer their image to blankets that imprint the cans with the company's standard buff, gold, red, and black colors.

(Turn Page)

FOUR-COLOR cylindrical offset press decorates 4 cans at a time. Maximum capacity is 6,000-7,000 cans per hour.



INDIVIDUALLY FED on spindles, cans begin zig-zag trip through 20-ft. drying oven (as seen in inside view).

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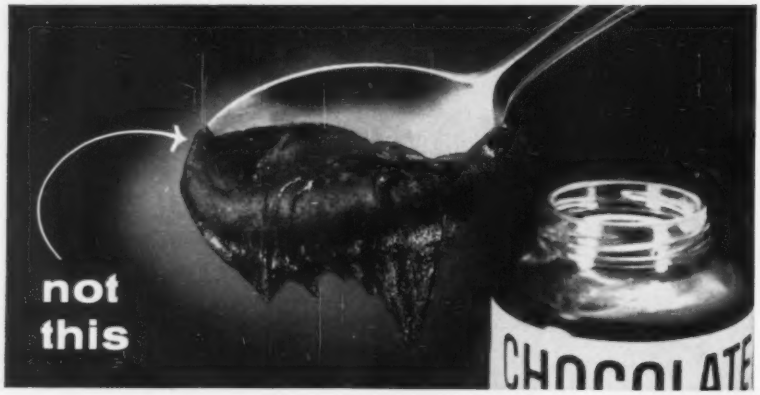

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Offset press, by a wet-on-wet process, applies an overcoat of finishing varnish at the same time it affixes the four colors.

Printed cans are bake-dried by moving continuously for 11 min. through a 350 F. oven. After drying, they receive a protective internal coating (beer vinyl) that's automatically applied by an airless spray system. Cans are then baked again, this time at 400 F.

Finished containers are trucked to a separate plant for filling. However, plans have been perfected for relocating filling and packaging so that they'll be a non-stop part of the can-making process.

To take advantage of the light metal, Coors sells a beer that's made by ultra-filtration instead of the usual pasteurization process. It's claimed to be the first true draught beer ever canned (our article on p. 97 details how this is done).

Side Benefits

R&D work also turned up solutions to some of the ticklish problems connected with handling lighter-than-steel cans on fast-moving filling lines. For example, the unscrambler which readies units for filling is equipped with nylon guides because the cans tended to "hang up" on the standard steel guides. This avoids the "stickiness" that occurs when aluminum runs over steel or any other metal.

Also, engineers found that friction created by steel contact sometimes marred the cans. For that reason, accumulating tables—where cans are collected after filling—are coated with a hard polyethylene to prevent marring. For the same reason, "Koroseal," rather than steel, is used in conveyors, and side rails are "Teflon"-equipped.

Marketing plans for the aluminum can are pitched on a modest scale. With initial output slated at only 100,000 cans daily, Coors is limiting selling efforts to the Denver metropolitan market (where its brand leads the field) and plans no advertising splurge.

The brewer reasons that there's no sense in building up demand while production is on a small scale. Also, that selling the product without any heavy pressure will result in a truer picture of consumer reaction.

"If we have come up with something really good," officials say, "our customers will be quick to tell us."

At first, sales will be aimed pri-

marily through packaged liquor stores, with less stress on food and drug outlets that have beer licenses. Company feels that emphasizing liquor stores will give the light container a fuller test from more discerning beer drinkers.

Coors chose the 7-oz. size for the market test because it was the most economical one to handle during the experimental can-making and lithographing phases. While conceding that the trend in beer cans is to larger sizes, officials point out that the 7-oz. unit is comparable to the pony-sized bottles some Eastern brewers have been marketing successfully.

Informed sources say that if the 7-oz. can goes over, Coors will introduce a companion 12-oz. aluminum can. And if Denver consumers give a favorable decision, it's a sure bet the brewer will expand distribution of aluminum canned beer throughout its 11 Western states marketing area.

While sales are confined to the Denver market—a short 15 miles from the plant—the brewer receives no unusual freight savings from the aluminum can's 40% lower weight. The dividends will start to come in if and when expansion is pushed to more distant markets.

One problem that's likely to crop up during the market test is the matter of refunds. Retailers may want extra compensation for handling returned cans much the same way food stores get a 2¢ handling charge from food manufacturers for each coupon they receive from consumers. —*End*

"Notice, Slugger, the exquisite flavor of the vanillin?"

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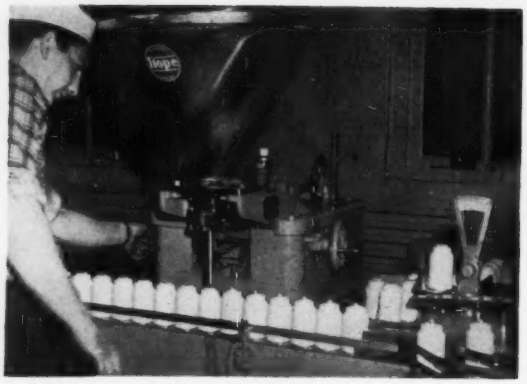


STERILIZED CANS are filled with 8 oz. of liquid coffee, leaving 4 oz. of headspace. Weighing station (right) insures precision fill.

SIX MONTHS-PLUS is shelf-life claimed for this aerosol liquid instant coffee. Lithography will replace paper labels once final design has been determined.

Tailored Combination: Liquid

Why did this processor select an aerosol? Answer: Pressure cans proved ideal for his special form of product.

LIQUID INSTANT COFFEE is the newest product to appear in pressure cans. And as the maker maps out national distribution, interest centers on how this combination of package and product was tailored.

Last month marked the beginning of full-scale operations for the processor—Tasti-Cup Coffee Corp., Brooklyn, N. Y.—which had previously restricted production to a small Long Island pilot plant.

The coffee is made with an exclusive extraction process patented by the company's president, M. J. Kahan, a veteran of 20 yrs. in the coffee business. Mr. Kahan holds two patents, the latest awarded only last month. He has licensed his process to such companies as Abbott's, Breyer's, and Borden's, where it is used to produce flavoring for coffee ice cream.

Manufacture of the liquid instant coffee is a continuous operation. The green coffee is purchased, blended, roasted, ground, extracted, packed, and shipped—all in one day.

This short and efficient cycle, states Mr. Kahan, provides the key to the product's quality. And he particularly cites its stable shelf-life. Kept refrigerated, the Tasti-Cup coffee has a stable pH after 6 mo. of storage. It will also show a count of less than 100 in a standard bacteria plate test.

Why did Mr. Kahan decide on an aerosol package? "Because," he explains, "it is the easiest way to dispense the liquid coffee concentrate."

The package is a two-piece extruded seamless can made by Crown Cork & Seal. A valve featuring a nylon dip tube for easy sterilization is supplied by Precision Valve Corp.

Propellant employed for the liquid product is nitrogen. "We experimented with several other gases," reports Mr. Kahan, "but the nitrogen has excellent properties for coffee. It acts as a protective blanket."

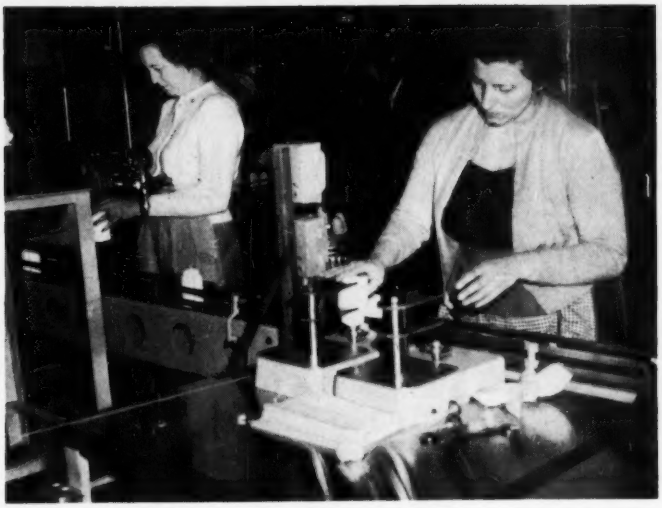
Creating The Package

Closeup of Operation

The packaging process begins with the pumping of the freshly extracted liquid coffee from holding tanks to a Hope filler. Here product is filled into cans that have been sterilized in a Wilmot autoclave and passed through an Island unscrambler.

After being filled with 8 oz. of product (the remaining 4 oz. in the 12 oz. can is headspace), the can is check-weighed. Next stop is a station where the valve is placed and crimped on an Aero-Matic unit.

A Beach-Russ vacuumizer removes the air before nitrogen is added. A leak-testing sink then checks all cans. Two Calrod drying units then blow water from the cans before they reach the table where caps are applied. The cans move by stainless steel track conveyors.



VACUUM IS PULLED after valves have been inserted and crimped. Then track conveyor moves can to gassing unit for addition of nitrogen propellant. This gas was selected for its preservation features.

Coffee in Aerosols

At present, all labels are applied by hand. This will continue until the processor has completed market tests, which will dictate the final label design. Then all labels will be lithographed on the cans.

Output of the product is now being built up as orders increase. Meanwhile, the company has plans for meeting forecast demands with addition of multiple filler heads and more gassing and crimping units.

The problem of refrigerating the product after packing has been temporarily solved by using a cold storage plant located conveniently next door to the Brooklyn plant. Walk-in refrigeration boxes will later be installed to keep the coffee at 40-45 F.

Marketing of the instant coffee is still in the initial stages. Articles and advertisements in the trade and gourmet press have brought inquiries and orders from as far away as Alaska and Finland. Specialty food shops have placed orders. Mr. Kahan is currently assigning districts to food brokers.

The president of Tasti-Cup does not see his product as a specialty food, but as a mass-appeal product to be sold in supermarkets.

Though its initial price to the consumer will be high—about $1.30—the wholesale price is fairly competitive. Holding 6 oz. of product and making 50 cups of coffee, the unit can be compared with the standard 6-oz. jar of powdered instant coffee. In one instance there is only a 14¢ difference in the price per case of Tasti-Cup units and a brand-name powdered instant.

Since the price of the aerosol package is almost offset by the savings experienced by cutting out the dehydration step needed for the powdered instants, Mr. Kahan feels that bulk sales will place the price on a competitive basis.

How will the consumer feel about the product? Mr. Kahan is optimistic. "We have a true instant coffee. It has real coffee aroma and flavor. It mixes instantly with hot or cold water. And it dispenses easily."

He does not see the refrigeration requirement as a problem. "People have to go to their refrigerators for cream anyway."

Tasti-Cup is also planning for the future:

Being perfected for the can is a dispensing valve that will measure out teaspoon and half-teaspoon amounts.

The company is also experimenting with aluminum aerosol cans. Samples have been provided by Continental Can Co. and Victor Metal Products. Biggest advantage of the aluminum cans will be the elimination of the phenolic lacquer lining now needed in the steel can.

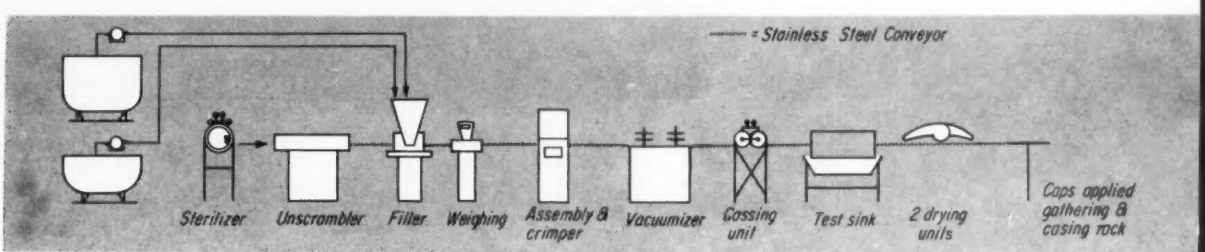
Tasti-Cup is also experimenting with a 16- and 32-oz. institutional size for the coffee.

A supplementary shift at the Brooklyn plant will soon pack Maison Julien chocolate syrup. The process remains the same for this contract packing, with the chocolate being pumped from holding tanks to the filler. Though the Maison Julien product is packed in a 16-oz. can, the same line will be used.

Meanwhile, major food companies are stepping up their experimentation with pressure-can packaging. Among newest products to be reported in the test markets:

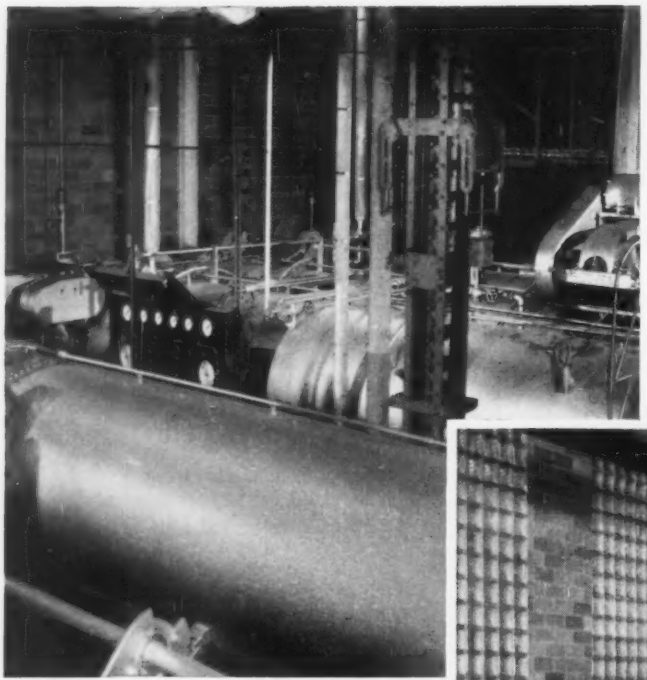
General Foods' Minute Man cake frosting concentrate.

Nestle's liquid chocolate product called Zip.



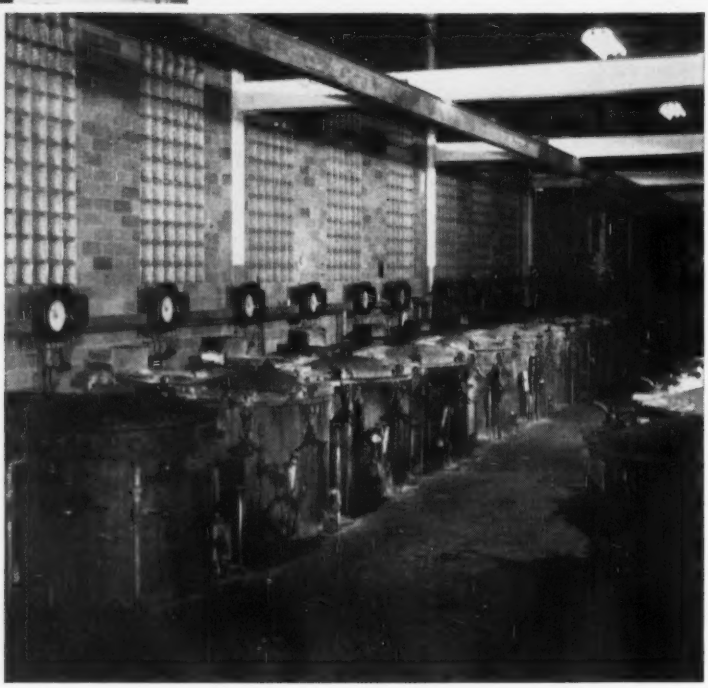
COMPANY-DESIGNED LINE is continuous, from extraction to casing.

American Home Foods
TAYLOR



Throughout the plant at Milton, Penn., American Home Foods, Division of American Home Products Corp., relies on Taylor instruments to protect its fine quality reputation.

High grade products marketed under the CHEF BOY-AR-DEE label include Ravioli, Spaghetti and Meat Balls, Beef-aroni, Spaghetti Dinners, Pizza, La-



Shown above are a few of several Taylor Controlled Food Machinery and Chemical Corporation's continuous Sterilmatic cooker and cooler lines. With this modern continuous sterilization method, precise temperature control is all important and consistently maintained by Taylor FULSCOPE* Controllers.

At right—some of the scores of Taylor controlled retorts. Well over 150 controllers are involved in the completely automatic steam cook system, processing tin containers for various tomato products.

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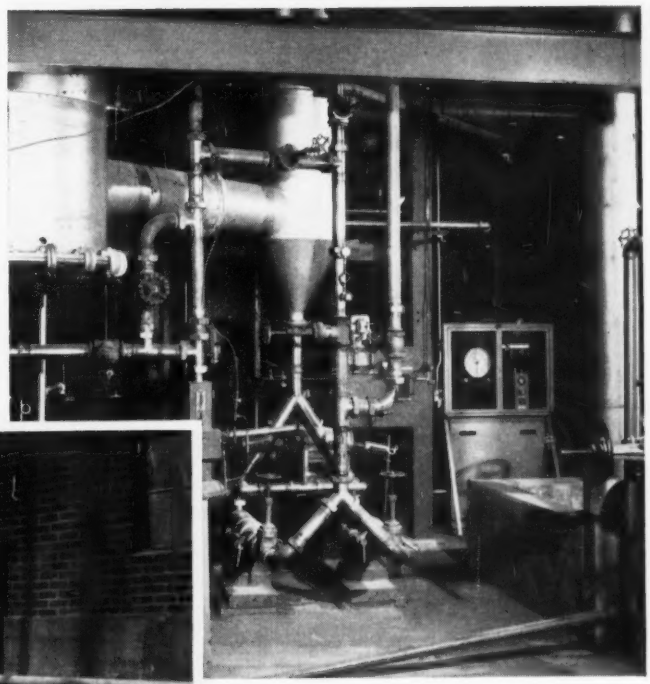

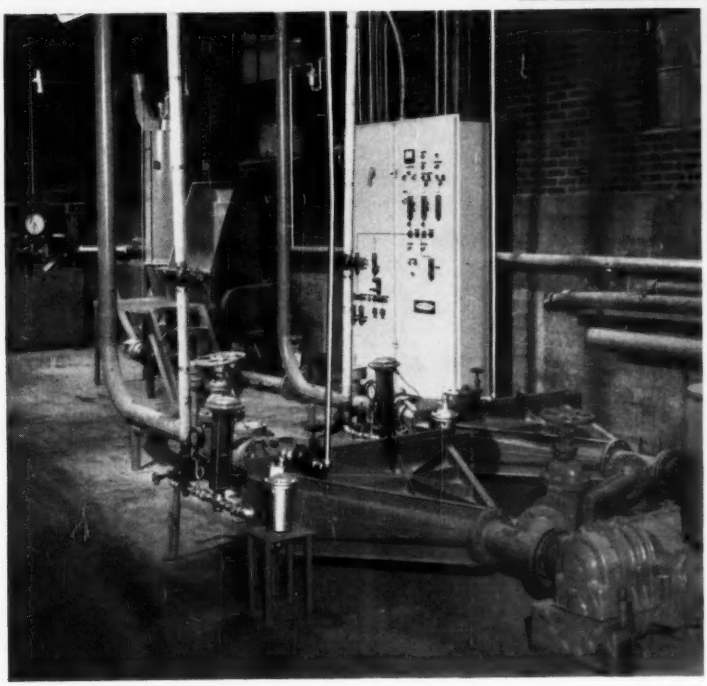

Photograph above shows a Buflovak Evaporator, used on tomato puree and paste required by American Home Foods' wide variety of products. Taylor controls insure a completely uniform product with maximum efficiency.

At left—the flour conveying system. Taylor TRANSAIRE* Temperature Transmitters and FULSCOPE Receiving Controller regulate flour temperature before it is mixed for various spaghetti and macaroni products and pizza.

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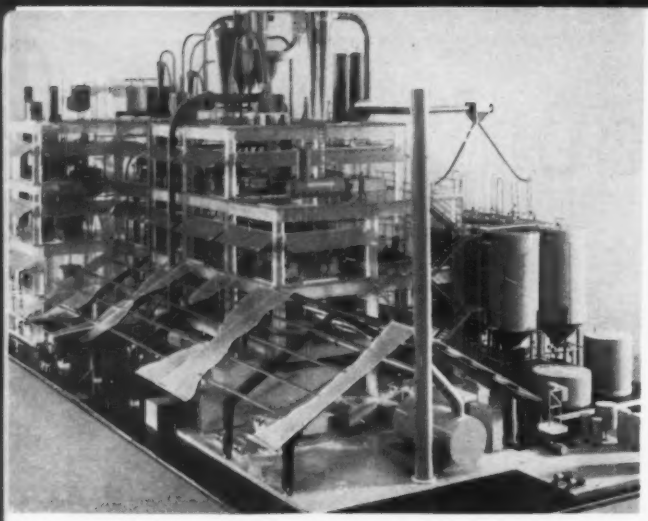
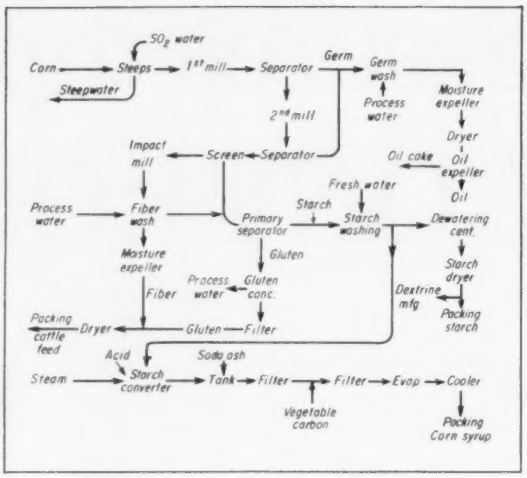


SCALE MODEL of "most modern corn wet milling plant" designed for 5,000-bu./day production at Cali, Columbia. Three-story outdoor, reinforced-concrete structure embodies latest process design, gravity flow.



HOW CORN will be converted to consumer and industrial items at new mill.

Innovations Spark New Corn Mill

Now under construction in SA, Corn Products $2 million facility combines numerous engineering advances previously tested separately in domestic plants . . . Said to be most modern in field

THREE PRIME ADVANCES in corn wet-milling will boost product quality and operating efficiency at Corn Products Co.'s new Cali, Colombia, plant.

Now under construction, the facility is to be operated by Maizena S. A. (wholly owned subsidiary), and it will pioneer:

1. **Impact milling of corn for complete release of starch.**
2. **Starch-gluten separation in 5 min. by combined centrifugal and cyclonic actions.**
3. **Unique fiber-washing method that halves processing time.**

Behind these significant developments is an unusual engineering philosophy: In researching improved processing methods, Corn Products tests each new technique by isolating it in one of its plants. Object is to show just how a single change affects both product and process.

When proved feasible, improvements are engineered into the design of new plants, such as at Cali.

Multi-Product Operation

Processing 5,000 bu. of corn daily, the plant will produce packaged corn starch for consumer use, and such industrial items as corn syrup, crude corn oil, byproduct feed, dextrines and adhesives, and starches for paper and textiles.

It is unique in that all processing will be done in a single outdoor 3-story 55-ft. high structure of reinforced-concrete. Much of the process flow will be by gravity.

Important advantage of this type construction is faster dissipation of the slightly acidic and corrosive atmosphere of SO_2 and moisture. To further combat corrosion, aluminum will be used throughout the plant for piping and tanks.

Newest and most radical process improvement is grinding of corn by impact milling in two stages, two mills in the first, one in the second. Called "Centrimils" (Entoleter Div., Safety Industries, Inc.), units have 27-in. rotors with peripheral vertical impacting pins between top and bottom plates. Surrounding the rotor is another set of stationary impacting pins mounted inside the housing.

Here is the mill's operating routine:

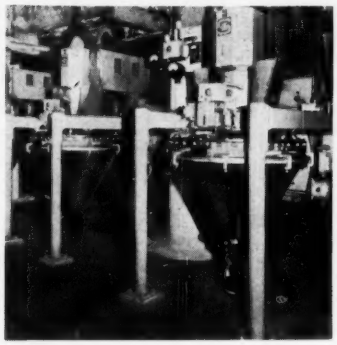
After steeping and germ removal, torn kernels and hull fragments undergo preliminary grinding in an attrition mill. However, this does not completely free the starch. To do so, the encapsuling fiber must be torn open in impact mills.

Entering the opening atop the mill, high-solids corn slurry (about as thick as gruel) flows out between top and bottom plates of rotor in a thin stream. The rotor accelerates hull particles by centrifugal action.

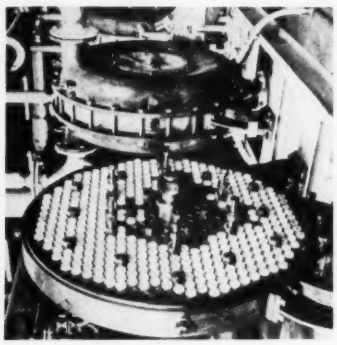
Hurled against the row of moving pins, particles are shattered on impact. Then they are flung across the gap separating moving pins from stationary ones, and are further fragmented. While most shattering occurs at rotor pins, added action of

J. W. POWER and R. F. HUEHNER,
Respectively, President and Manager, Latin American Division, Bedford Construction Co.

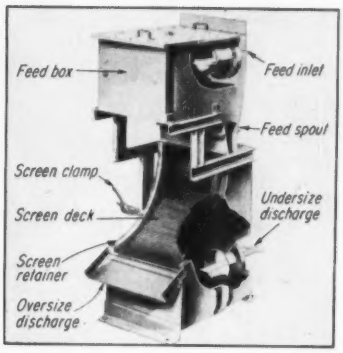
Advanced Units That Show the Way



IMPACT MILLS similar to these in N. Kansas City plant will increase yield and improve starch quality. In them, partially ground kernels are hurled at high speed against moving pins.



FOLLOWING TESTS at Argo, Ill., cyclone separators similar to these will be used. Each unit at Cali will have 125 tiny cyclones mounted like those in disassembled unit (left).



CONCAVE SLOTTED SCREENS with slightly separated wedge-shaped cross bars are to be used for dewatering grain from storage and again after steeping.

stationary impacting pins is a bonus requiring no extra power.

By teaming centrifuges (Merco) and cyclonic separators of the multiple type, (DorrClone, Dorr-Oliver Co.) engineers will slash the time for starch-gluten separation from 1 hr. to only 5 min.

Starch-Gluten Separation

At Cali, cyclones replace the second stage of centrifuging, thus eliminating need of continuous drum-type filters. Only 10 mm. in dia., these units will be employed in a countercurrent starch-washing system.

Cyclone dimensions are extremely critical for successful starch separation. Capacity of each cyclone is a function of these dimensions, and varies as pressure drops between feed inlet and overflow outlet. But since particle size does not greatly depend upon pressure drop, increasing pressure does not significantly reduce diameter of separation.

Because of their extremely small diameter, a great many cyclones can be nested in a single large housing by mounting them horizontally between two vertical stainless steel plates. The two plates partition interior of separator into a central feed chamber and two outer chambers, one for overflow, the other for underflow.

Cali will have a 9-stage starch-washing system, with 125 cyclones in each separator. Plates can actually mount a maximum of 144 cyclones, thus enabling adjustments for flow variations between stages and for stepped up capacity. The system will not only separate starch from solubles, but further simultaneously remove soluble and insoluble protein.

After milling and fiber removal, the main process stream is pumped to three high-speed nozzle-type centrifuges which, because of their suspended bowl design and large rotor diameter, have high capacity.

These units remove more than 85% of the lighter gluten from the heavier starch. Light overflow (70% protein) goes into feed manufacture. Heavy underflow from final centrifuge, containing starch, unseparated gluten, and solubles, is pumped to a surge tank and then to the washing system.

Feed to washing system usually contains 2-2½% protein. From surge tank, it is pumped at 125 gpm. to system's first stage at 85-90 psi.

Starch-laden underflow moves through successive stages from first to ninth. Overflow, containing gluten, solubles, and wash water, moves countercurrently from ninth to first.

Feed for each stage after the first consists of starch-rich underflow from preceding stage blended with overflow from succeeding stage. It enters each separator's central chamber, surrounds the cyclones, and feeds into them tangentially near the conical base.

As feed swirls through the cyclone, heavier starch particles are spun around the wall by centrifugal force resulting from high radial velocities produced by tangential entry of feed. Radial velocities change from wall to core because of cyclone's hydraulic design and because momentum is conserved. Exceedingly high shearing forces that result, plus recycle within the washing system, enable sharp separation.

How It's Done

Starch particles move toward apex of cone and discharge into underflow chamber. Lighter gluten, together with solubles and most of the water, proceed toward center of cone. Picked up by the vortex finder or overflow port, this stream discharges into the overflow chamber. Final starch underflow from the ninth stage contains only 0.3% protein.

Thus by combining centrifuges with washing system, engineers will achieve efficient and continuous production of high-quality starch low in unwanted protein. At the same time, they will recover, as overflow from centrifuging step, a protein-rich gluten for feed. And this faster and sharper separation will be accomplished with only simple controls, a boon to new operators at Cali.

Operator will control mill feed to centrifuges and flow of wash water to them. He will also manually control underflow density by adjusting drawoff rate.

Not only feed to centrifuges but also countercurrent flow of wash water will be regulated. Operator

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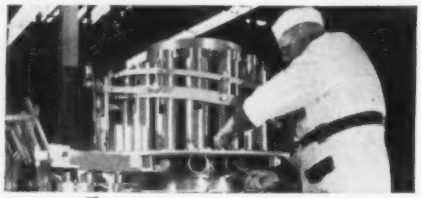
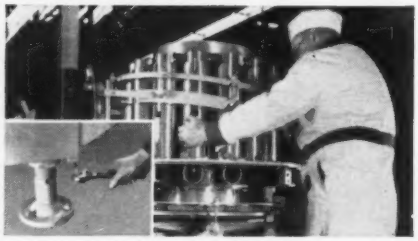
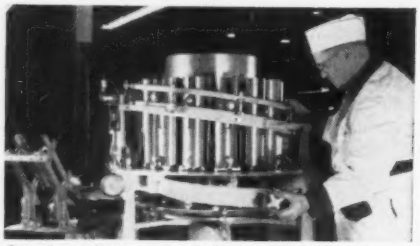


Save 80% on change-over time with new Pfaudler RP-214 rotary piston filler. Bowl and cam ring stay put. Operator raises piston, removes valve plugs.



Just turn bowl to new height. Spacer ring adjusts automatically. Piston and valve cam tracks are set by adjustable support leg screws (see inset photo).



One hour later valve plugs are replaced and pistons are lowered into position. Operator closes valve cam ring access door and the machine is ready to go.

Other features: ±1/10 fluid oz. accuracy. Speeds up to 400 cans/minute. No container—no fill mechanism; air operated for faster response and less maintenance. Just 30 minutes to clean. Only four primary wearing parts. Write to our Pfaudler Div., Dept. FE-29, Rochester 3, N. Y., for Bulletin 973. *And see it at the Canners Show, Booth 34.*

75 YEARS CREATING FOR TOMORROW Pfaudler

will likewise set flow rates of wash water and starch. However, starch withdrawal rate will largely depend on supply conditions.

Control will be accomplished essentially by regulating back pressure on underflow of each centrifuge stage. This can be done manually, or automatically by a control valve in combination with a density measuring device and a pressure regulator. Increasing the back pressure will increase density of underflow discharge, and decrease ratio of underflow volume rate to that of feed.

Recovery of solids in each stage will depend on this volume ratio and on feed dilution. For feed at unfluctuating dilution, system will be set for maximum underflow density in first stage and optimum solids recovery in succeeding stages.

Besides being easy to control, the washing system will be far less costly than the secondary centrifuges it eliminates. It will also be simpler and more flexible in operation, with lower operating and maintenance costs. But, best of all, it will enable greater uniformity and constant quality in the final starch product, despite variations in protein content of incoming feed. Separation of starch and gluten will not only be sharper but also cleaner, since it will be carried out in a completely sanitary enclosed system. And most significantly, it will take only minutes instead of hours.

Novel Fiber Washing

Last in the trio of outstanding engineering advances is the novel method for washing finely ground wet mash to remove hulls or fiber. Up to now, most corn wet milling plants have accomplished this by using reels and shakers.

New method will slash processing time in half. Equipment combines high capacity and compactness. It can handle large throughputs rapidly, and will occupy far less space than conventional reels and shakers. At Cali, fiber washing screens will occupy a single bay, compared with the five or six needed for reels and shakers of the same capacity.

Liquid transport will be used to convey grain from storage silos to processing and from steeping to milling. Centrifugals will pump these water suspensions.

This system has three advantages: It washes the grain, thus provides a cleaner raw material. Warm water from the process at 100-110F. can be used to convey the 70F. grain,

For more data, circle 282 on Reader Service Card

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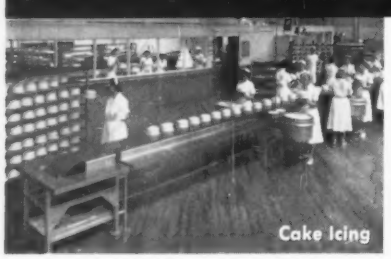

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SUGAR
Bulk, Raw and Refined Sugar Handling, Cube Sugar Packaging

VEGETABLES
Washing and Inspection, Loose Freezing unpackaged French Fries, Peas, String Beans

simultaneously preheating it for steeping. Finally, it is convenient for grain to enter a wet process in water suspension.

In another improved processing method, two concave slotted screens (Dorr-Oliver) will be used for dewatering grain from storage and again after steeping. A similar screen will be employed in the first stage of germ recovery. Size separation is controlled by width of openings between screen's wedge bars. Largest undersize particles are about half the size of spacing.

Units are extremely compact, and require far less space than conventional equipment. They operate at high capacities, and wedge bar design enables high screening efficiency, with no screen blinding.

Cali will be the first Corn Products plant to employ two stages of cyclones to replace the second stage of germ separation. Advantage is taken of differences in specific gravity to separate germs from starch and cellular material in the starch magma. The same principle is used in conventional gravity germ separators, but because of increased centrifugal force, cyclones separate the germs much faster and in a smaller vessel.

Another ingenious engineering accomplishment will combine flash drying of fiber with rotary parallel-flow drying of feed to attain an overall dryer efficiency of 75-80%.

Here's how it will work: Fiber at about 90F. and 55% moisture is picked up by gases leaving feed dryer at 182-200F. Hot gases flash-dry the fiber to 35% moisture and simultaneously convey it 30 ft. upward. This system can handle up to 30 tons per day (dry basis).

From the cyclone, partially dried fiber at 120-125F. enters a blender, joining the protein stream which is at 90-95F. and 55% moisture. After blending, mixture enters rotary parallel flow dryer at 90-95F. and 45% moisture. Hot air, for drying, enters this unit at 900F. and flows through in the same direction as the feed, which is dried to 12% moisture.

In corn syrup manufacture, starch will be pre-pasted before it goes to the converter. Thus it will be thoroughly mixed and partially converted before it enters the process. There will also be a novel filtration step in the carbon treatment for clarifying the syrup. Candle-type ceramic filters will be used to separate any residual solid impurities, such as fats or proteins. —*End*

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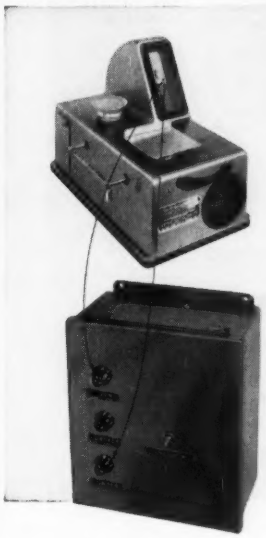

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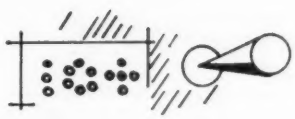
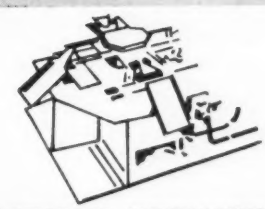
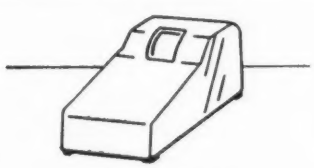


OPERATES SIGNALS



ACTUATES MECHANISMS



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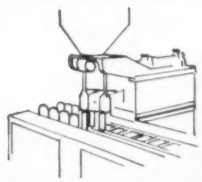

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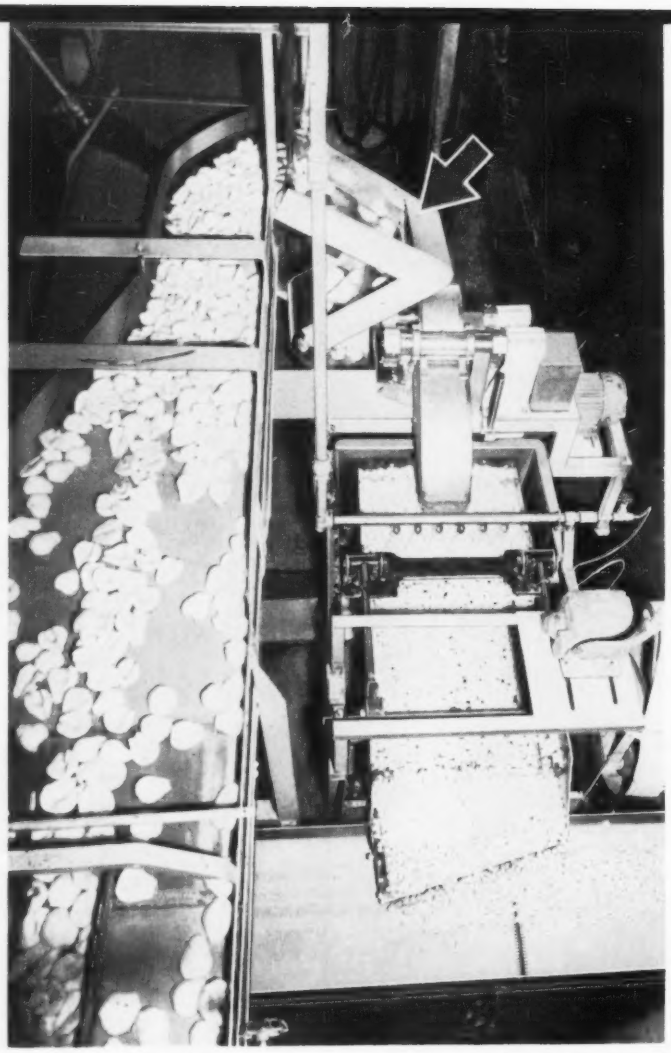
Cutting



UNIFORM FEEDING is key to top cutter performance. Here, flow of halved pears to dicer is carefully controlled by special feeder (arrow).

Latest machines and techniques increase variety of packs, boost yields, improve quality and appearance

SPECTACULAR ADVANCES in design and construction of cutting machines open the door to a number of plump dividends.

Taking advantage of these new strides, alert processors can—

▶ **1. Extend their lines** into wider varieties of packs.

▶ **2. Streamline in-plant handling.** Diced and sliced products are easier to convey, pump, heat-process, freeze, and fill. Containers, too, are more uniformly filled and, in many cases, at a faster rate. For example, some packers estimate cost of filling chopped greens as about one-fourth that of whole leaves.

▶ **3. Improve taste appeal.** Flavors are more uniformly released from cut foods. Also, cut pieces more evenly absorb brine, seasonings, etc.

▶ **4. Add new and excitingly different food cuts.** One cutter started a consumer swing from round podded beans to French-style strips. Another betters eye-appeal by cutting products into strips and slices with crinkled surfaces. Still another chops greens (spinach, broccoli, etc.) so that none-too-attractive stems lose their identity. Others make triangular and rectangular cuts.

▶ **5. Upgrade by-products, reduce losses.** One machine sifts slivers from French fries to be cut for potato cakes. Formerly wasted broccoli trimmings are diced into an acceptable product. Syrups are recovered and blended with diced pickles and candied fruits as they're discharged from the dicer. One new dicer cuts losses by up to 12%.

JOE URSCHEL and JOHN V. ZIEMBA

Respectively, President, Urschel Laboratories, Inc., Valparaiso, Ind., and Associate Editor, "Food Engineering"

Choice of Metals Vital

Various foods react differently with metals. Acidy, salty pickles etch surfaces of carbon steel knives, yet they maintain sharp edges. But product picks up iron and is discolored. Also, carbon steel knives rust when idle, and the next product cut takes up the oxidized iron.

By "eating" copper (as little as 1 ppm.) out of bronze, relish becomes contaminated. Then when it's blended with salad dressing to make sandwich spread, the copper catalyzes fat rancidity. As little as 1½ ppm. of it will impart an artificially green color to pickles. Along with iron, it's also picked up by cut pineapple to form a black coating on interiors of metal containers.

Corrosion-inducing foods rust iron frameworks, requiring periodic sandblasting and repainting. Hard, root-type vegetables ruin the edge-holding properties of improperly designed and constructed knives.

To put cutting machines to most efficient use, equipment manufacturers called on metallurgists for assistance in selecting and heat treating usable metals. As a result, stainless steel has replaced bronze to check corrosion and metal pickup by acid-and-salt-containing foods.

Knives are now being surface-hardened by the induction method to resist abrasion and flaking.

Pickle packers are going to stainless framework to reduce maintenance and improve sanitation. Square steel tubing is replacing angle iron going into framework, because it's easier to keep clean and to secure to other parts.

Bronze, on the other hand, is more suitable for non-acid foods. It's less expensive and easier to fabricate than stainless. Carbon steel holds a good knife edge with a minimum of sharpening.

Really hard knives stay sharp the longest. But if they're hardened too

Units Offer Many New Benefits

much (to Rockwell 65 C) they may break upon impact, or shatter when contacting an object such as a peach pit. Too soft an edge will bend before it breaks. Solution is to compromise between Rockwell 40 and 50 C.

But putting the right hardness into a knife means nothing if its edge isn't properly designed. A slim beveled edge is weak and easily bent. One beveled to a thick edge splits, rather than cuts, giving an uneven, ragged finish. A combination thin-and-thick beveled edge has strength and cuts cleanly.

Knife speed also has a bearing. The faster a cut, the smoother it is. Actually, some knives go through products at 120-mph. speeds.

Points on Design

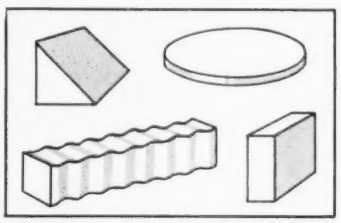
Getting the best design for machines to cut foods into different shapes and sizes is not easy. It takes much experimentation with many styles of knives arranged in different combinations.

Simplest and best method is the cutting of slices one at a time by a stationary knife, with each cut dropping freely away. But when products must be cut into other shapes, the job is more difficult. It calls for forcing products through a series of knives in a single pass and with great care. Here's where design engineers have come up with advanced multiple cutters.

One of the simplest employs two sets of knives for cutting strip, Julienne or French fry potatoes. A stationary knife first slices the spuds, then they are cut into strips by a set of moving blades.

More complicated is the dicer with three sets of knives—one stationary plus two groups of moving ones. In sequence, product is sliced, strip cut, then diced.

Still more complex are the machines making special crinkle (one, two, or four surfaces) or rectangular cuts. One has a corrugated stationary knife that prepares slices (potatoes, beets, or pickles) that are crinkled on two surfaces. Another unit crinkle-cuts French-fries on all four sides by first running potatoes through a stationary knife, then forcing slices through a set of circular knives with corrugated blades. Still



SPECIAL CUTS boost food appeal.

another designed for rectangular cuts ($\frac{1}{4}$x$\frac{3}{8}$x1-in. beef and $\frac{1}{4}$x$\frac{1}{4}$x1$\frac{1}{4}$-in. vegetables for soups) employs a stationary slice-cutting knife and set of dicing knives with different spacings.

A specially designed multiple cutter features a knifing unit with a series of staggered blade edges for narrow-width products like snap beans. The first knife cuts the bean's end before the second blade starts to cut, then the second cuts before the third, and so on down through the series of knives.

Tips on Treating Products

A cutter manufacturer may do his best in fabricating equipment to make quality cuts. However, these factors relative to the products cut can be vital in the results: (1) Their proper pre-treatment, as may be required; (2) their lubricating properties; and (3) the uniformity with which they are fed in.

As for pretreatment—blanching or tempering—raw beets and carrots are too brittle, and if not first blanched, they'll split upon cutting and knives will roughen their cut surfaces. Beans will break if they don't get a slight blanch. Poultry must be cooked, cooled, and boned, otherwise it lacks firmness and is too "rubbery" for proper and efficient cutting. Meat falls apart during dicing unless machine speed is reduced and knives kept extremely sharp.

Brittle products like raw potatoes won't go through high-speed cutters without splitting or roughening the surface. So they must be properly tempered with warm water. And spuds can't be cooked, otherwise they'd be too mushy for cutting.

Freeze-molded meats must be tempered to around 28F., or they'll shatter when sliced or diced.

Some products, like certain pickles, must be firmed with sugar before cutting. Others must be size-graded, otherwise they'll be too large for the machine to handle. Still others, like apples, must be soaked in water.

Relative to lubrication, cheese is found lacking. Generally, it can't readily be sliced or diced without adhering to the knives. The only diceable cheese is low-fat Swiss. Present solution is to use wire cutters.

Non-uniform product flow can bring major difficulties in cutting operations. In many cases, products are dumped directly into cutters resulting in jumbles and pile-ups that can only mean poor cutting performance.

Here are ways of obtaining uniform feeds:

1. Dump product into a hopper discharging onto inclined take-away conveyor (with flights and rotary leveler). Then let product drop into a second hopper mounted over a pair of narrow, V-arranged moving belts that align it and stabilize the feed.

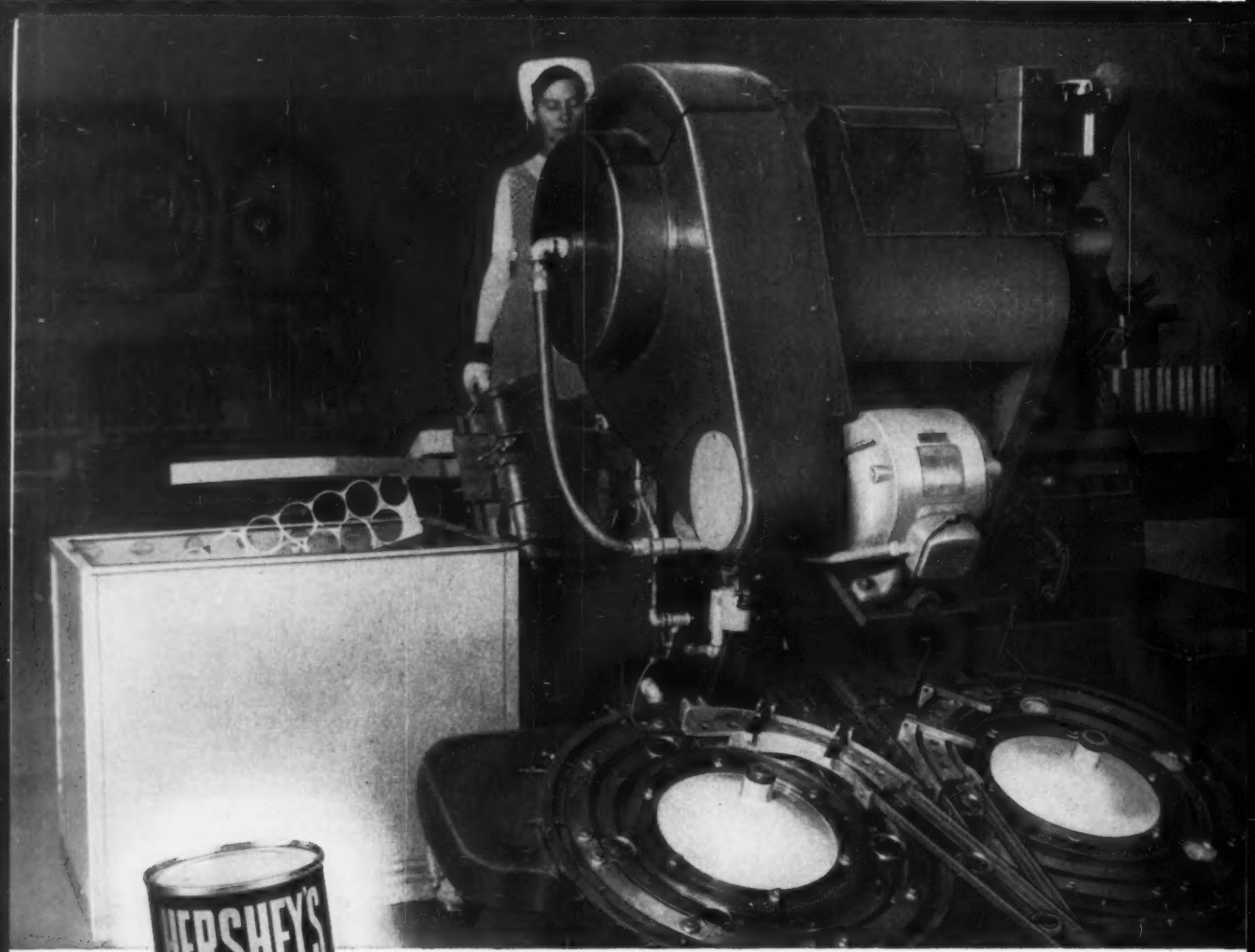
2. For products traveling through high-pressure spray-type rotary reel washers, flow can be improved with a new unit (A. K. Robbins) that consists of an even-flow pocket-type elevator discharging material onto a vibrating chute.

Maintenance Suggestions

Like other machines, cutters need careful attention. Knives must be periodically sharpened to give smooth, clean cuts and to prevent downtime. Good policy is to change knives at least once during a shift. Machines have been designed so that highly accurate knife assemblies are completely changed in 5 min.

Component parts are easily and quickly disassembled for cleaning without removing fastenings, and are as easy to assemble. While some parts are secured with wing nuts, trend is to eliminate them for fear they'll end up in machine and product. Framework is of sanitary tubular construction to abolish corners, ledges, etc.

Cutting units are also becoming safer to operate. Knife assemblies are equipped with guards. Electric-type brake motors bring 2,000 rpm. knives to an abrupt stop. Some users employ limit switches to break motor circuits whenever guards are removed. —*End*



CHOCOLATE... *with a touch of* BLISS

Hershey Chocolate has found it practical to manufacture the millions of cans it needs each year for its famous chocolate syrup.

The strip feed press and curler shown above, slitting equipment and scroll shears turn out all of their ends and body blanks. Still other Bliss equipment produces and assembles can components for cocoa and other Hershey products.

Perhaps making your own cans makes sense to you. If it does, you'll be interested to know Bliss builds and equips entire "turn-key" plants. If you need a complete can making installation . . . a dozen machines . . . or just one, or if you buy or sell cans, write to Bliss today for more information.

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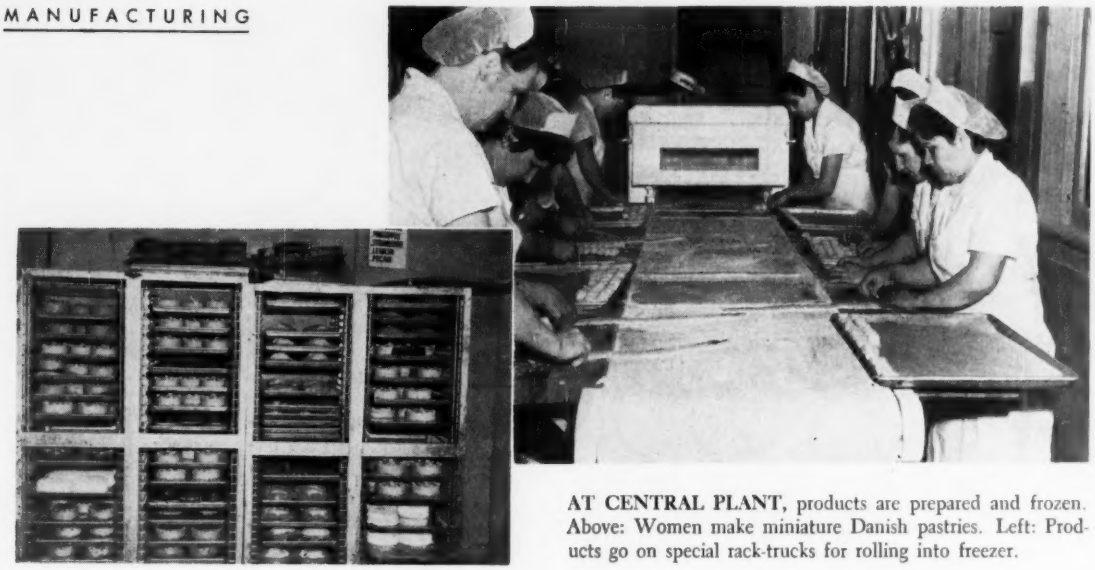

AT CENTRAL PLANT, products are prepared and frozen. Above: Women make miniature Danish pastries. Left: Products go on special rack-trucks for rolling into freezer.

In-Store Baking—Freezing Is Key

New York super chain cashes in on visual freshness of pastries baked right in stores. Raw goods are prepared and frozen in central plant

CONSUMER REACTION—acid test of any new sales idea—heartily endorses the practice of including an "on the premises" bakery in the supermarket, as is now being done in New York's Daitch-Shopwell stores.

One reason for this enthusiam is the visual proof of product freshness. Looking beyond the display counter, shoppers can see the goods baking in the continuous oven.

Continued success is triple-insured:

1. Daitch has highest quality standards—demanding larger than usual amounts of eggs and butter—which lead to comments such as, "Like Mother used to make!"

2. Preparing and freezing raw goods at central plant and delivering them frozen to store bakery adds efficiency and flexibility.

3. Stale returns are eliminated, since baker keeps goods frozen until he is ready to bake them—a schedule closely tied to consumer demand.

Daitch pioneered this operation in late 1956, when it opened a complete bakery in one store. Its quick popularity led to launching of another in a second store. At this point, management decided that since the idea was a success, they could cut cost and boost efficiency by making the raw goods at a central point and freezing them for delivery. So space was made available in the company's plant.

Trial and error had to serve as guides for these pioneers. Most of the "advice" given them was that their idea wouldn't work.

Their line of products was developed by making up an item, freezing it, baking it, and then judging how it turned out. They found that frosting is a particularly touchy point. Many icings won't stand up under freezing before they are baked.

Prepared in the company kitchen, the goods are loaded onto trays and stacked in wheeled racks. When filled, these are rolled into a −5F. freezer. Here they can stay, with no danger of quality loss, until ready for delivery.

For transport to the stores, trays are placed in closed racks and rolled into refrigerated delivery trucks. Each rack has two trays of dry ice at the top. Arriving at the store, racks are transferred to cabinet-type freezers kept below 0F. Here they remain until baking time.

Items prepared include cakes (cheese, marble, pound), cream pies, miniature Danish pastries, coffee rings, cheese cake strips, apple turnovers, and individual onion rolls. Product range is somewhat restricted by freezing limits, since not all items will maintain quality when frozen raw.

"In fact," says Louis Rutstein, production manager, "we don't try to offer a complete bakery line. Our operation is tailored to those products lending themselves to freezing and customer demand."

Quality—A Must

Only experienced bakers are used in the store bakeries. This assures quality control right up to the sale.

Since some of the items need proofing before baking, each shop has a proof box handy to the oven. Other goods are put into the oven still frozen.

(Turn page)

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HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885

Not all of the company's supermarkets have in-store bakeries. This is due to the management's careful analyses of the market areas of the stores. The demand has to be such that it will support quality items at prices higher than the ordinary run of baked goods.

This goes along with the Daitch theory of keeping its goods high in quality and not hinging sales on price.

"We would rather maintain high quality products for those who will pay for them instead of trying to saturate the market," says Rutstein.

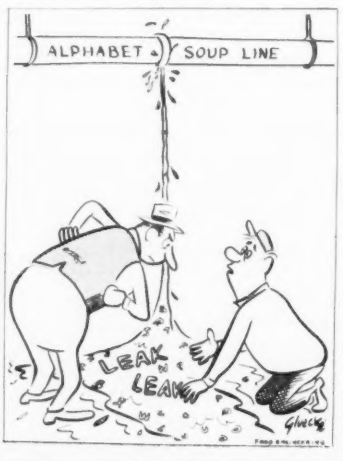
In a recent variation of the project, a centrally located store that includes a bakery supplies a limited amount of baked goods to several "satellite" stores. This has increased volume without added cost or detracting sales from the stores not having bakeries.

Focus on Cost Balance

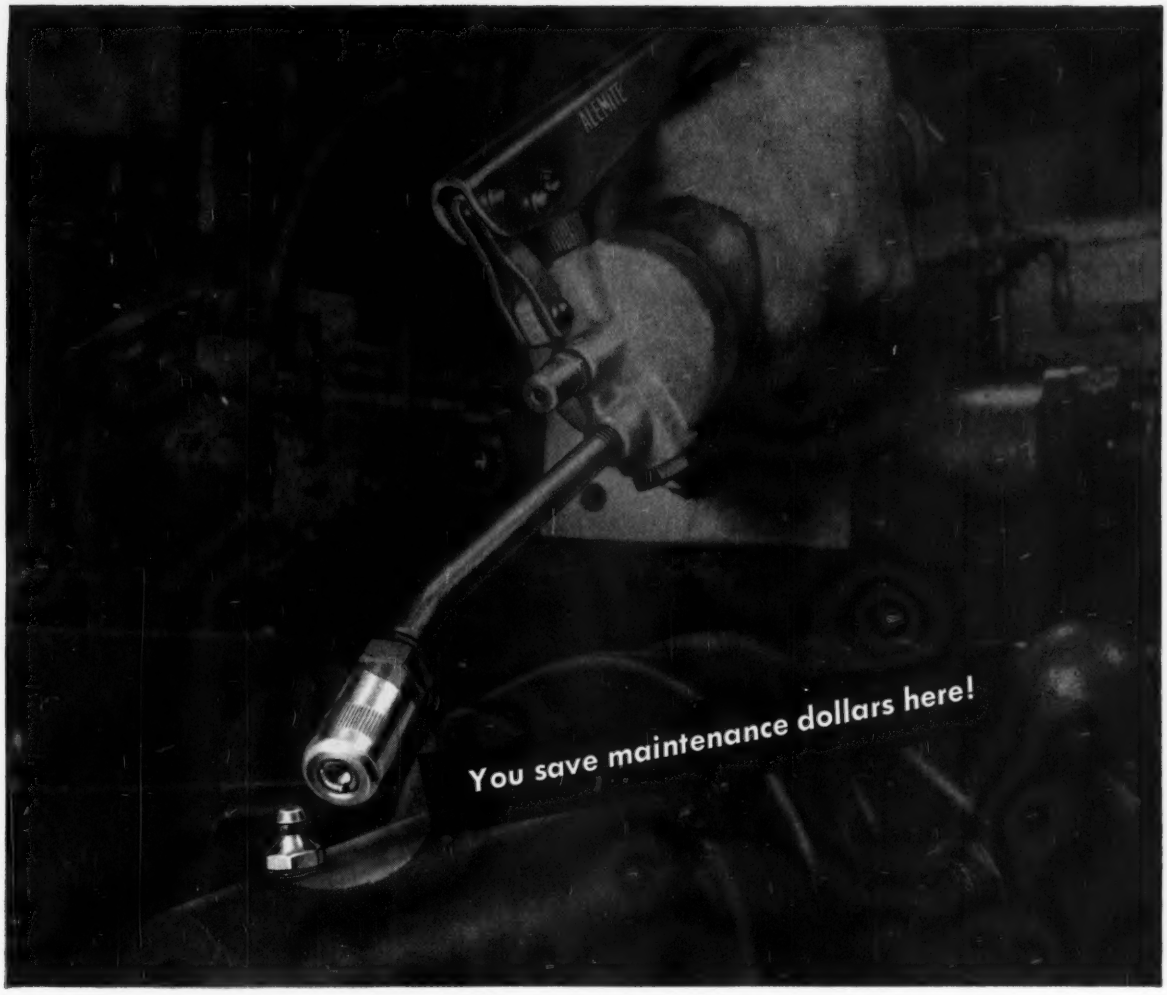
This in-store bakery operation has higher cost due to the freezing and premium-ingredient requirements. However, costs are considerably balanced by the fact that stale-losses are at a minimum in this type of operation.

On entering the store, many shoppers will first stop in the bakery department to place orders. Then later, after completing their grocery purchases, they'll come back and pick up their baked goods "hot from the oven." Custom baking for shoppers is also a frequent practice.

—FE Staff



"Well, you said to be sure and call attention to anything that goes wrong."



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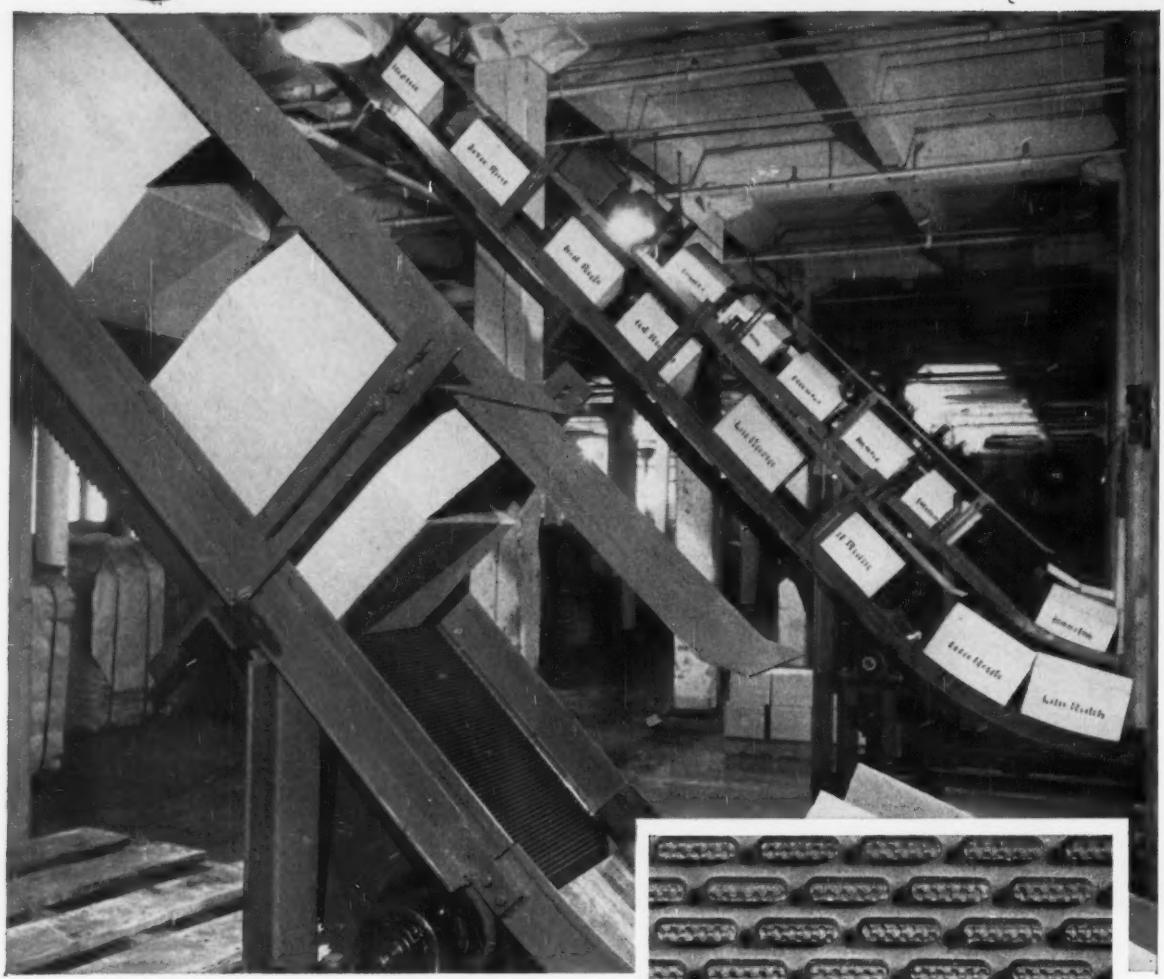
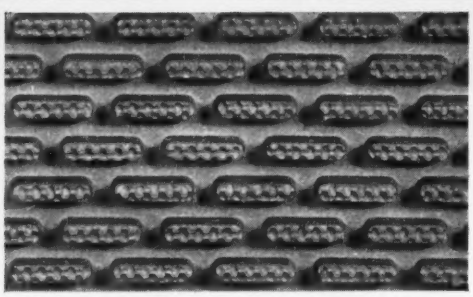
US RUBBER **STEEPGRADE CONVEYOR BELTING**





Exclusive "gripper cleat" construction means the cleats are *not* attached or cut in; they are *molded*—a true and integral part of the belt—and cannot be torn off by heavy boxes.

Whatever became of Gravity?

It's hard to believe that these cartons are not nailed down to the U. S. SteepGrade Belts, so steep is the angle of descent. The scene is the American Can Company's plant in Baltimore, Md., and these light, smooth-finished cartons are being carried at an angle of 45 degrees—*with no slippage*. The sharp angle is necessary because existing floor beams and walls limit the space.

Before the installation of U. S. SteepGrade Belts (there are 10 in all) the cartons went down chutes. This often caused pile-ups at the bottom, with spilled cans, broken cartons and lost tempers. But SteepGrade now offers controlled descent, with cartons evenly spaced. Exclusive "gripper cleat" construction holds the cartons firmly—even at steep, gravity-defying angles—thereby saving valuable floor space, conveyor length and belt footage.

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and the finest quality industrial rubber products.

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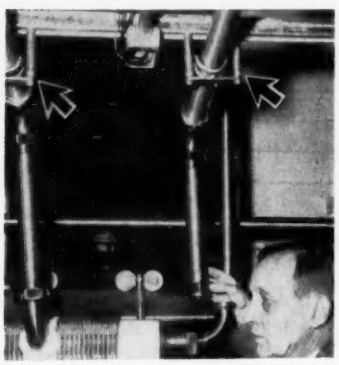
Making Fork Truck Safer

Operators of electric fork-lift trucks in our warehouse developed the dangerous habit of allowing their left foot (not employed in driving the vehicle) to dangle over the side of the cab.

To overcome this tendency, I installed a safety pedal on left side of floorboard that must be engaged by operator's left foot to move the truck.

It comprises a 3½x7½x⅛-in. diamond steel plate and a very sensitive switch attached to truck's electrical system. Plate is hinged at its base and switch is installed under its front end. To move truck, operator must place left foot on pedal. This closes switch and completes electrical circuit. When foot is removed from plate switch opens circuit and vehicle stops.—*Hy Beitscher, Warehouse Maintenance Man, Food Fair Stores, Inc., Southern Div., Miami.*



Stainless Spring Hanger Speeds Pipe Assembly

Assembling and dismantling the 2-in. sanitary fittings attached to pipes that are hooked up to our pasteurizers and other milk-processing equipment can be quite a chore.

Aligning pipes with fitting—especially on reassembling—has been greatly simplified through installation of spring-tension hangers (arrows in photo) supporting the overhead horizontal lines.

Each hanger comprises a pair of ¾-in. stainless steel springs 4 in. long bolted to a ceiling-suspended horizontal iron plate.—*Henry Maas, Maintenance & Engineering Supt., Rochester Dairy Cooperative, Rochester, Minn.*

Paddle Wheels Iron Out Feed Problems

Employing conventional diversion arms or plates to move products like fresh spinach from a cross conveyor into chutes supplying inspection belts, crushes and bruises the products.

Also, products pile up behind the arms making it necessary to manually clear away the piles.

At Stokely-Van Camp Frozen Food Div., Santa Clara, Calif., these problems were overcome by installation of paddle wheels over the feed conveyor (arrows in photo). These rubber-tipped, 4-vaned devices are driven by individual motors, enabling them to be operated independently. —*FE Staff.*

Walking Lawn Sprinkler Really Cleans Tanks

Each time a beer tank is emptied, it must be washed and sanitized. This necessitated a workman entering with buckets and brushes and spending an hour or so scrubbing the ceiling, walls and floor.

In an attempt to find a better, easier and more sanitary way, several stationary sprinkling systems were tried without complete success. But it was observed that, where jets of detergent contacted the walls, clean-was satisfactory. Use of a "walking" sprinkler was suggested and, when tried, gave excellent results.

In this unit, pressure of the water or solution rotates two spray arms, and also moves the sprinkler along slowly by means of geared wheels. By the time sprinkler has traveled length of a 20-ft. tank, spray arms have rotated more than 7,000 times, and the solution has contacted every square inch of surface many times

and from several different directions.

In practice, the sprinkler is set up (photo) in the rear of the tank (the only time a workman enters). The supply hose, which can be ⅜ or ¾ in., is laid straight along bottom, out through the manhole, and connected with discharge side of circulating pump.

A solution of detergents and sanitizers is made up in the bottom

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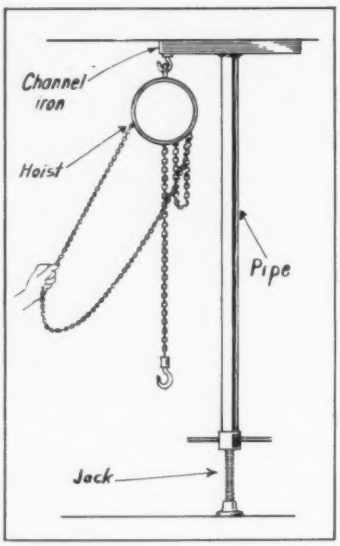
Practical Ideas

of the tank. Then hose is attached from tank's outlet-line to the pump, pump is started and cleaning begins.

When sprinkler has walked to front of tank, the rotating arms contact supply hose leading out of manhole, causing the rotation to stop, and the entire sprinkler assembly to cease moving. Operator may then push sprinkler back to rear of tank and rinse it by connecting supply hose to fresh water tap. Rinsing is continued until all traces of detergent are removed.

To protect tank lining from the large metal gears that form the wheels of the sprinkler, an over-size rubber disk was bolted to the outside of the gear wheel. This allows the gear to work properly and permits the sprinkler to ride on the rubber tires.—*William Hamilton, Asst. Brewmaster, Blitz-Weinhard Co., Portland, Ore.*

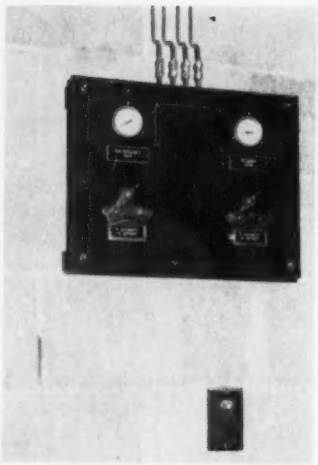


Easy Does It Hoist

Lifting heavy equipment, such as electric motors, in an area where there are no ceiling beams to which a block and tackle can be attached presents a problem for maintenance men. But, with a recently suggested device the job is easy.

Device consists of a short piece of channel iron with a hook for attaching a hand hoist. Channel is welded at its center to a section of pipe. Other end of pipe is fastened to a small jack.

When desiring to raise equipment, device is set up next to it and channel is forced tight against the ceiling by raising the jack.—*FE Staff.*



Panel Mounted Pushbuttons Automate Coil Defrosting

When we constructed the 33F. dough retarding room in our new bakery we incorporated several features that would enable us to change it over to a −20F. freezer at a future date.

Walls are of 8-in. cork, and underground heating cables were installed to prevent freezing of the subsoil. But we didn't install the more expensive refrigeration coils needed in the freezer, nor make provision for automatic defrosting. Instead, we're using fin-type coils and circulating 20F. propylene glycol as the refrigerant.

The coils were periodically defrosted by manually closing valves in the glycol feed lines. But this had to be done in accordance with our irregular production schedules which are geared to customer demand.

To improve the operation, we installed panelboard-mounted air switches (photo) that by-pass thermostats in both retarder and ingredient rooms. Pushbutton operation of these switches opens or closes air-

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For example, at 100 psig the ¾" size will handle 5600 lbs/hr; the 2½" size, 62,000 lbs/hr.

Specify the Yarway Series 40 Trap for applications on large autoclaves, cooking kettles, heat exchangers, heating coils and other places where loads are heavy.

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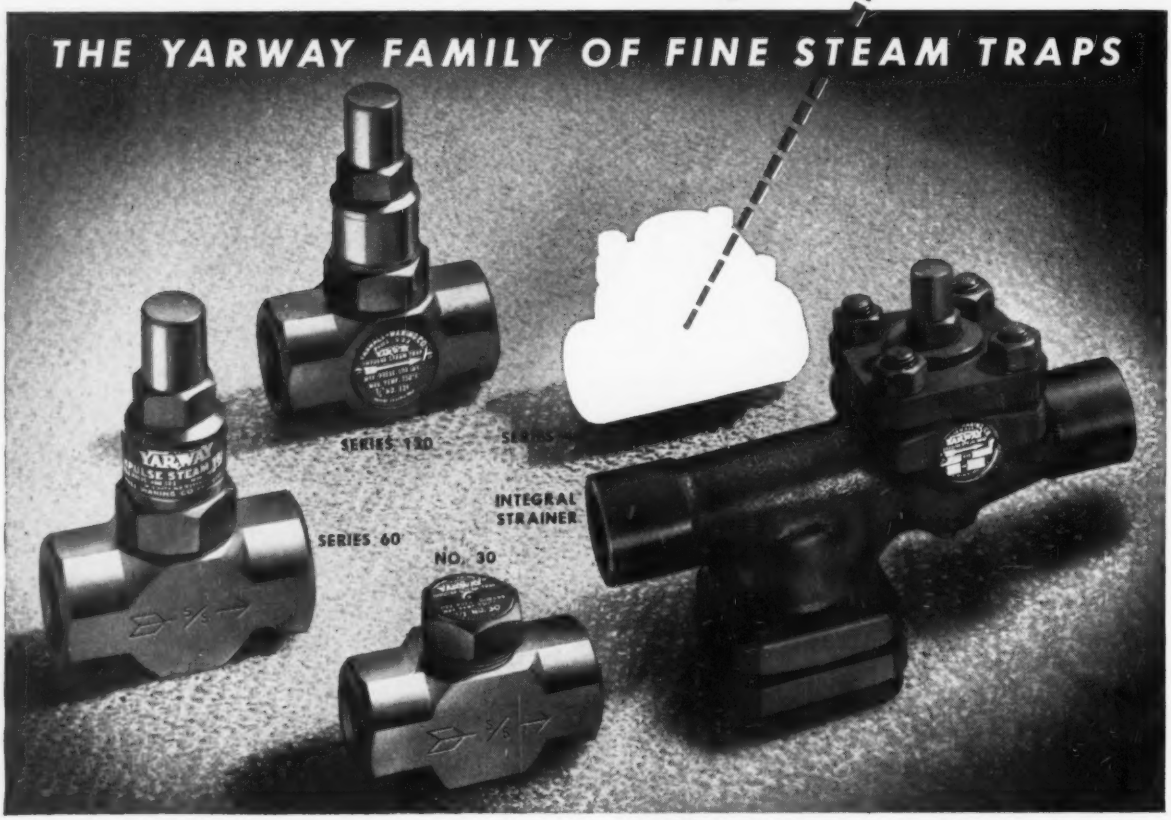

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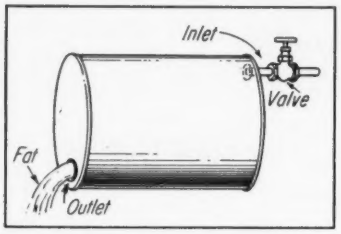
operated modulating valves (Johnson) in glycol lines to defrost coils at production superintendent's will.

When it comes time to convert retarding room into a freezer, we're all set to install automatic defrosting coils (Thermobank) and use −30F. glycol as refrigerant.—*Minos Asproyerakas, V. P. & Chief Eng., National Baking Co., Chicago.*



Empties Fat Drum Fast

We usually receive tallow, lard, or other types of fat in 50 gal. steel drums, and had considerable difficulty in removing these products without ruining the containers. But with the method now used, little trouble is experienced.

We attach a steam line to the small inlet of the drum (sketch) and remove the large outlet plug. Steam is then turned on slowly causing the fat to melt. The steam also exerts sufficient pressure to force the melted product from the outlet, and quickly empty the drum. A pressure up to 50 lb. does not injure the drum.—*B. R. Suri, Director of Research, Compania Swift de Brasil, Utinga.*

Check-Weighing Speeded With Second Conveyor

Here's a system that has significantly increased production on a line where filled packages of vegetables to be frozen are check-weighed before wrapping. (Turn page)

Stainless Steel Strip

MicroRold® quality

WASHINGTON STEEL CORPORATION

2-W Woodland Ave., Washington, Pennsylvania

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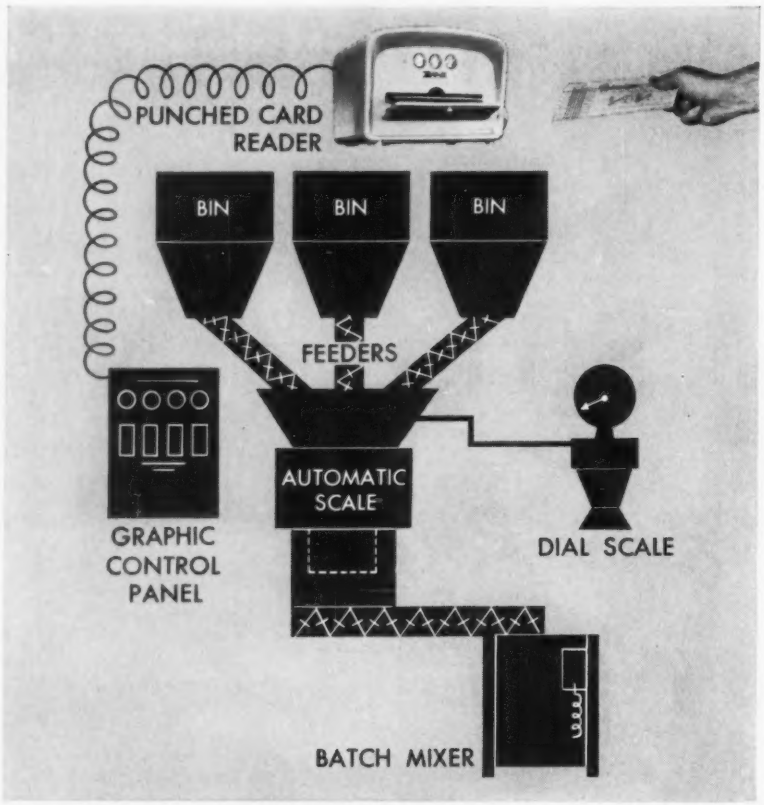

RICHARDSON SELECT-O-WEIGH

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When required, service is available from Richardson's nationwide network of service facilities . . . within 24 hours. Custom-engineered by the world's foremost manufacturer of automatic weighing and proportioning equipment, Select-O-Weigh helps you make a better, more uniform product, at lower cost. For full details write, wire or call today.

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1556

Practical Ideas

A study of the check-weighing lines at the Santa Clara, Calif. frozen food plant of Stokely-Van Camp indicated that labor involved in this operation was out of proportion to similar plant procedures.

The problem centered on confusion resulting from using a single belt for both unweighed and weighed cartons. Operators would remove filled cartons, weigh them, then replace them on far side of the same belt as it moved to the wrapping machine.

Then a 2-belt system was devised. With it, the unweighed cartons move to check-weighers on the outside belt (right in photo). Cartons are positioned with their tops facing the operators, who merely grasp the lids and slide cartons onto scale balances.

After obtaining accurate weight (note stainless steel box with make-up products at operators' right) carton is slid off scale onto take-away belt (arrow) leading to the wrapper. This arrangement has effected a marked reduction in labor on the line.—*FE Staff.*

Practical Tips

For ease in handling glue it's a good idea to obtain three 2-gal. coffee pots and cut out the sieves. One pot should be filled with glue, properly mixed and ready for use. The second should have thinner glue (40% water) to add to that in the machine which may thicken on certains days. Third pot is for water for soaking cloth in cleaning glue pads and for general cleaning.

Here's a time saving tip for changing over machines for packaging, labeling, etc. Have a separate box for parts involved in each size change. Boxes should be neatly marked with pertinent information about its contents.

Boxes should be kept in an available storage cabinet or portable cart with capacity for several boxes. And be sure to have empty box for parts being removed.

Place safety slogans on drinking cups.

Use a periscope to inspect inside of tank cars.

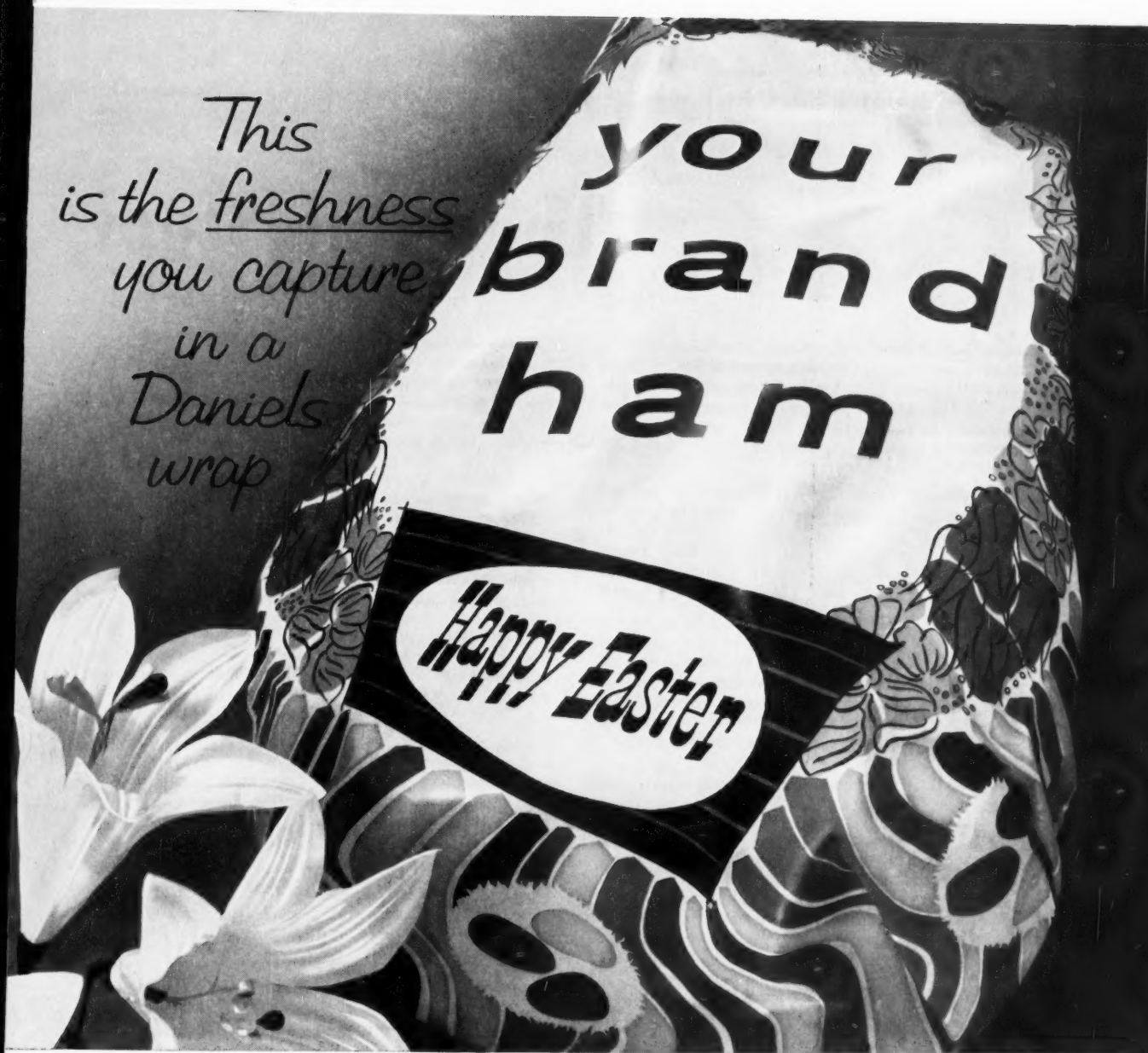
Purchase shovels with straight handles that are easier to replace.

Convert used hypodermic needles to meter chart pens.

Dip push brooms in hot water daily to increase their life.

For more data, circle 294 on Reader Service Card

For more data, circle 295 on Reader Service Card→



What better way to make yours the ham people ask for? These Daniels overwraps will enhance your packages, with their gay, colorful patterns giving them just the right touch for the season.

Each of these Daniels overwrap patterns is printed with the same meticulous care for which our craftsmen are noted. If you want to add showmanship to your hams at Easter, contact your nearest Daniels sales office today, or write Daniels Manufacturing Company, Rhinelander, Wisconsin.

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Choose from these colorful patterns

(*Advertisement*)

The Vital Story

A Puzzling Medical Case. A sick, fretful baby lay on his back in a hospital crib recently, his legs extended and his knees slightly bent. He cried and tried to draw away from the examining physician. The doctor studied the case carefully, noting the symptoms and investigating the history of the little patient. Then he made his diagnosis. The baby had *scurvy*.

An Ancient Disease. To us scurvy is a remote disease. We know that years ago it attacked sailors and explorers living on monotonous diets of salt meat and hardtack. But it's hard to believe that scurvy occurs even today in the United States. To be sure, there are few cases, but there should be none! Scurvy is a disease resulting from a deficiency in the diet; it is simply the lack of enough vitamin C.

Scurvy was a disease of the Crusades. It traveled with Vasco de Gama around the Cape of Good Hope, killing two-thirds of his crew. It struck down a quarter of Cartier's men wintering in Canada in 1535. It occurred in famines and pestilences.

Vitamin C Isolated. Long before vitamin C was known, man found certain fruits and vegetables helpful in preventing and treating scurvy. These had been a remedy for scurvy for about 300 years when, in the first quarter of the Twentieth Century, researchers began to examine foods to discover the factor which made them antiscorbutic.

Between 1918 and 1925, Zilva concentrated this antiscorbutic substance from lemons and Agopian isolated it in cabbage.

Zilva's work established the important properties of the vitamin, its molecular construction, and its activity as a "reducing factor" — its ability to absorb oxygen. In 1928 Szent-Györgyi, after eight years of investigation, isolated a strong reducing compound from adrenal glands, oranges and cabbage, which he called "hexuronic acid."

In 1931 C. G. King established the chemical structure of vitamin C, thus opening the way to new and important findings. The following year various investigators identified the "reducing factor," "hexuronic acid" and vitamin C as the same compound.

Nature's Vitamin Duplicated. Soon after the vitamin had been isolated and its chemical structure understood, it was synthesized by Reichstein and his fellow workers in Switzerland. Almost simultaneously in Great Britain, Haworth and his associates achieved the same results. The year was 1933.

The synthesis of vitamin C led to pilot plant and then to commercial production, making it available at lower costs than if it had been extracted from natural sources. In fact, the Reichstein synthesis is the basis for weekly production *by the tons* by the firm of Hoffmann-La Roche, the world's largest producer of vitamin C. This commercial production of vitamin C has had incalculable value to the health of people all over the world.

To The Moon And Back. In the United States today, the average *weekly* production of man-made vitamin C now approaches 40 tons — the amount contained in approximately three-quarters of a billion average oranges.

A graphic way to illustrate the huge annual production is to show the equivalent in oranges. Laid side by side, these oranges would reach over two million miles, or more than four round trips to the moon. The *weekly* production alone, expressed as oranges, would circle the world at the equator over one and one-half times.

Synthesis on such a gigantic scale has led to economical costs. Because of this and its proven value to health, vitamin C has an increasingly widespread use in food and pharmaceutical products. There is no substitute for Vitamin C!

A Little Goes A Long Way. One kilogram (2.2 pounds) of pure vitamin C will supply 13,333 people for one day with the amount recommended (75 milligrams) for daily intake by the National Research Council. Or it will supply 92 people for one year with the adult Minimum Daily Requirement (30 milligrams) set by the U. S. Food and Drug Administration.

Names. The designation, vitamin C, is used interchangeably with ascorbic acid. "Ascorbic" is a relatively new word in our language. It was devised by Szent-Györgyi and Haworth in 1933 from antiscorbutic.

Among chemists and nutritionists, vitamin C is known as *l*-ascorbic acid. The formula is $C_6H_8O_6$, which means that it is composed of carbon, hydrogen, and oxygen.

Physical Characteristics. *l*-Ascorbic acid is a white crystalline compound with a slightly acidic taste. It is readily soluble in water, alcohol, glycerin and propylene glycol, and insoluble in oils, fats, ether, benzene or chloroform.

Since it is able to "attach" itself to oxygen it is one of our most important antioxidants for certain foods that have a tendency to discolor and lose their natural flavor.

The designation "U. S. P." used with *l*-ascorbic acid indicates that the product conforms to the stringent specifications of the United States Pharmacopeia. These initials stand for top quality.

Vitamin C made by the Roche process is chemically and biologically identical with nature's own product.

How Vitamin C Helps Our Health. Vitamin C is a vital substance; we cannot live without it. Not only does it prevent or cure scurvy, but it is essential for maintaining healthy bone tissue, and for forming collagen, an important protein found in our skin, tendons, bones, cartilage and connective tissue. Vitamin C is needed for the healthy functioning of the vessels

Expanded Version

# of VITAMIN C *by* Science Writer

(*l*-Ascorbic Acid)

through which our body fluids flow. It also promotes healing of wounds and fractures. It is believed to be essential for tissue respiration, the continual action of the cells as they burn food materials to provide heat and energy for the body.

Our Daily Requirements. Even though ascorbic acid is found in all body tissues and fluids, it will be rapidly exhausted if we do not replenish our supplies each day.

The Food and Drug Administration of the U. S. Department of Health, Education and Welfare has established a *Minimum Daily Requirement* for adults of 30 milligrams. This is just enough to prevent recognizable signs of vitamin C deficiency.

The Food & Nutrition Board, National Research Council, recommends in its 1958 publication #589, these daily dietary allowances which are well above the F. & D. A. minimum:

Recommendations for Daily Vitamin C Intake

Ascorbic Acid (milligrams)

Men, all ages	75	Children, age 4-6	50
Women, all ages	70	Children, age 7-9	60
Women, pregnant (second half)	100	Children, age 10-12	75
Women, lactating	150	Boys, age 13-15	90
Infants, to one year	30	Boys, age 16-19	100
Children, age 1-3	35	Girls, age 13-15	80
		Girls, age 16-19	80

Use in Medicine. For some conditions, ascorbic acid is a necessity; for others, it is a help in restoring the body to normal. It is obvious that vitamin C is the cure for scurvy. Medical science has also found it to be helpful in the treatment of burns, in the repair of fractures, in high fever, in shock, in surgery and in exposure to extreme temperatures.

Of special importance is the use of ascorbic acid by pregnant and lactating patients. The physician must see that the infant receives his share of the essential vitamin, and that the mother's supply is not depleted.

Pharmaceutical manufacturers prepare many forms and potencies of vitamin C for the physician to prescribe.

Which Foods Are Best? Vitamin C is present in many foods. Citrus fruits — oranges, lemons, grapefruit, etc. — are generally good sources. Other fruit, certain green vegetables, tomatoes and potatoes are also sources of the vitamin. There are wide differences, however, between foods and even between varieties of the same food. The differences among commercially canned juices are graphically shown in the following table compiled by the U. S. Department of Agriculture:

Juice	Minimum	Maximum
	mg. ascorbic acid/100 mg. juice	
Apple	0.2	3.6
Grape	0	4.7
Grapefruit	10.0	49.0
Orange	9.7	70.0
Pineapple	5.4	18.0
Tomato	2.5	32.0

A Public Health Problem. It's an ironic situation that Americans, who have a plentiful and varied diet available to them, have been found by responsible researchers to have subclinical and recognizable vitamin C deficiencies.

The public relies on processed juices to supply a large part of its daily vitamin C requirement. All unknowing, it often fails to receive even a token amount because of the variations shown.

For these reasons — *widespread deficiencies and inadequate intake* — it is desirable to standardize the vitamin C content of processed fruit and vegetable juices at levels which will guarantee a significant amount of the vitamin per each serving of juice. Diet experts believe that such standardization is in the public interest. It may be achieved by the simple addition of pure, crystalline vitamin C. The Canadian government has recognized the value of this idea and has set a standard which all "vitaminized" apple juice must meet.

Saved: Natural Color and Flavor. Many delicious fruits which are quick frozen lose their natural color and delicate flavor during thawing. By adding pure *l*-ascorbic acid to these before freezing, processors can protect the natural color and flavor during thawing and for some time after. The ascorbic acid acts as an antioxidant; it "takes up" the oxygen in the air before that oxygen can trigger the reactions which cause the undesirable changes.

Vitamin C has been used for more than 15 years as the preferred antioxidant in frozen peaches, apricots, apples, berries, bananas, pears, pineapple, fruit purees and fruit cocktail. It has been used also in canned fruit and fruit juices, sauerkraut, pickles, beer, cured meats, milk, and mushrooms.

Homemakers seeking variety in the fruit and fruit juices served to their families will be influenced to buy the product to which sufficient *l*-ascorbic acid has been added to allow a label claim. When a nutritive claim is made for a food, a declaration must appear on the label. One form reads:

> *"One four-ounce portion provides 100% of the minimum daily adult requirement of vitamin C."*

Processors using the twin benefits of *l*-ascorbic acid — nutritive value and antioxidant effect — are delivering more attractive, more palatable, more popular, and more valuable foods.

Yours For the Asking. Summarizing our present knowledge of this vitamin, this article is one of a series published by the Vitamin Division of Hoffmann-La Roche Inc. Reprints of this, and all others in the series, are available without charge. Reasonable quantities will be available to those in education who wish to use the material in their teaching. Send your request to Vitamin Division, Hoffmann-La Roche Inc., Roche Park, Nutley 10, New Jersey; in Canada to Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P.Q.

PUSHBUTTON initiates flow of incoming flour. From dump-blender (right), it is screw-conveyed to sifter and rotary feeder, then delivered pneumatically to a pre-selected storage bin.

PHONE-TYPE DIAL actuates any of nine relays to recirculate and aerate flours in bins, or to tranfer them between bins. Seen here experimenting with temporary dial is inventor of system and author of this article.

Ingenious Bulk-Flow Controls Up Handling Efficiency

Check your ingredient proportioning against this unique "phone-type" dialing used to blend flours and scale them into mixers . . . Sanitary, foolproof technique also seen applicable to shortening, liquids

STAY OUT FRONT in production technology!

. . . That's a must for any company which wants to keep competitive, improve product quality, and maintain profits. It's especially true in our business—baking of soft buns, hard rolls, and breads.

To keep moving ahead, we at National Baking Co. use the most advanced equipment, and even modify it when necessary.

How National minimizes production costs and promotes product quality may best be seen in our bulk handling of flour. Big problem here was to store, blend, and accurately scale the flour into mixers in a more efficient and sanitary manner.

M. ASPROYERAKAS
Vice-President & Chief Engineer, National Baking Co., Chicago

Our new setup did not spring from the drawing board on the first try. We checked current methods and found that none fitted our specifications exactly. Nearest, we figured, would be a pneumatic system. However, there were three factors we wished to avoid:

. . . **Blowing flour** into a scale hopper 'rail-mounted over mixers might, we felt, permit seepage of dust or contaminated flour. Moreover, the system might not be sufficiently flexible for adequate purging each time flour is scaled. Too, dust and flour accumulating on scale hopper and support beams would entail periodic cleaning to prevent a sanitation hazard.

. . . **Excessive scale pre-settings,**

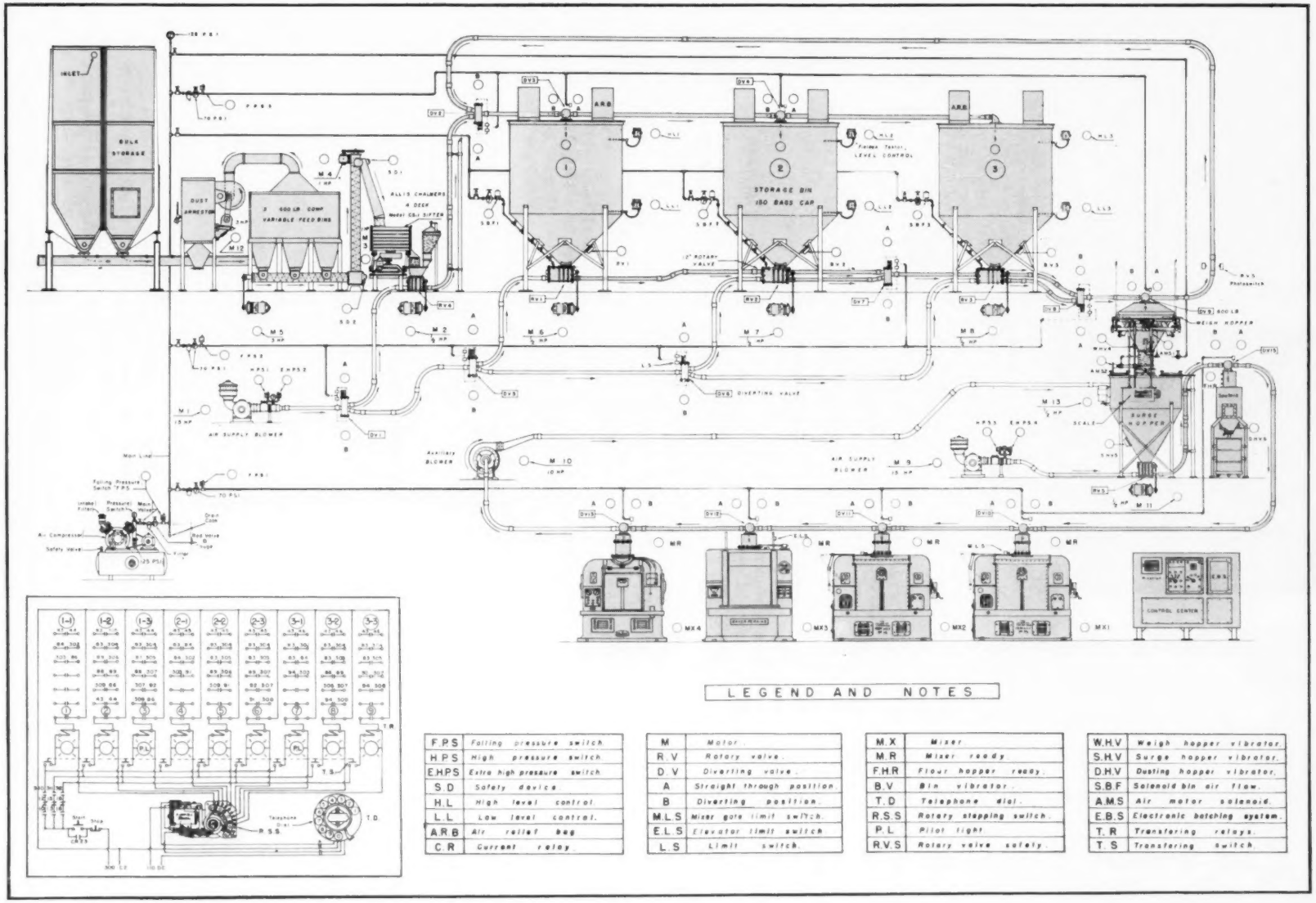
Detailed Chart Traces Flow →

ENGINEERING DETAILS and product flow (color) are charted at right. Dialing-control electrical system is at lower left in diagram.

To transfer flour from Bin 1 to Bin 2, for example, operator moves switch TS (electrical diagram), dials 2, and presses start button. Then valves in pneumatic flow system are automatically positioned, and air blower and bin vibrator start. Flour then flows into Bin 2. Cut-off is automatic.

To move flour from bin to scale hopper, operator positions selector switch, sets scale for desired amount, and presses button that positions flow valves. Electric signal from scale starts blower and Bin 2 vibrator. In blending, routine is repeated for different bins.

With batch in scale hopper, operator presses button to release flour to surge hopper. To actuate flow to designated mixer, he sets selector switch and presses another button.



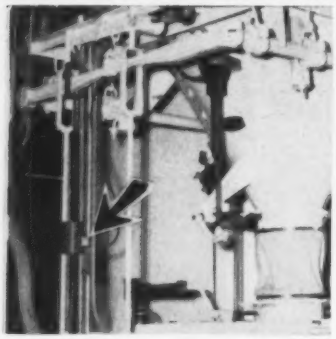
LEGEND AND NOTES

F.P.S	Falling pressure switch.
H.P.S	High pressure switch.
E.H.P.S	Extra high pressure switch.
S.D	Safety device.
H.L	High level control.
L.L	Low level control.
A.R.B	Air relief bag.
C.R	Current relay.

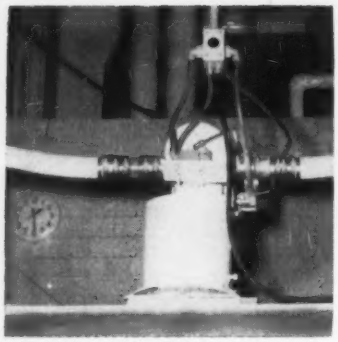
M	Motor.
R.V	Rotary valve.
D.V	Diverting valve.
A	Straight through position.
B	Diverting position.
M.L.S	Mixer gate limit switch.
E.L.S	Elevator limit switch.
L.S	Limit switch.

M.X	Mixer.
M.R	Mixer ready.
F.H.R	Flour hopper ready.
B.V	Bin vibrator.
T.D	Telephone dial.
R.S.S	Rotary stepping switch.
P.L	Pilot light.
R.V.S	Rotary valve safety.

W.H.V	Weigh hopper vibrator.
S.H.V	Surge hopper vibrator.
D.H.V	Dusting hopper vibrator.
S.B.F	Solenoid bin air flow.
A.M.S	Air motor solenoid.
E.B.S	Electronic batching system.
T.R	Transfering relays.
T.S	Transfering switch.



LOAD CELL (arrow), attached to scale beam, electrically batches flour, then shuts off pneumatic conveying system.



NO SCALE HOPPER above mixer. Flour is air-conveyed from central scale hopper in storage area.

which multiply the possibilities of error.

. . . **Massive construction** of scale hopper, monorail, and supporting structure would detract from appearance of our mixing room.

So we modified a pneumatic system to fit into an integrated pattern for efficient materials handling and future expansion. Changes were carefully planned and carried out in stages.

First, we centralized handling by scaling the flour in the storage area --away from mixers--thus abolishing dust-collecting surfaces in the mixing room. Employed is a bag-dumping station supplying three 15,000-lb.-capacity silos. Interior coats of a plastic material give them smooth, nontoxic surfaces.

In the near future, we will unload Airslide cars and trailers to feed four additional 100,000-lb. storage bins. The bag-dump setup will provide flexibility for handling bag lots in event of transportation delays or stoppages.

Inside Story

In operation, flour enters the system through a hooded, 3-compartment dump hopper (18 bag capacity), equipped with a 3-hp. blower and flour-dust collector. Variable-speed, 8-in.-dia. worm screws driven by a 3-hp. motor automatically blend flours as they travel to an 8-in. transverse auger. Latter transfers the blend to an 8-in., 1-hp. vertical screw feeding a 4-deck gyratory sifter (Allis-Chalmers).

Next, a rotary 10-in. valve (½-hp. motor) picks up the flour, which is then pneumatically conveyed (300 cfm., 3-in. piping) to the top of a pre-designated silo by a 15-hp. air blower. Lucite sight glasses (6 in. long) at pipe-discharge sections permit operator to observe the actual flour flow.

Bin loading is controlled from a panel located adjacent to the dump hopper.

Throwing a switch starts the flour dust-collector blower and turns on a flood light. Next, a selector switch is set for the desired bin, and an air-operated electrically interlocked valve is diverted to close off all other bins. A start button first actuates the blower, which purges the system for 30 sec. Then, in sequence, it operates dump hopper-worm screws, vertical screw, sifter, and rotary valve.

An important safety feature is a Tektor high-low level indicator (Robertshaw-Fulton Controls Co.'s Fielden Instrument Div.) hooked up to a system of signal horns and lights.

Electronic unit consists of a Teflon-insulated stainless-steel probe whose capacitance changes and energizes a relay (when bin is full). This automatically shuts off the flour-loading system and flashes a red "full bin" light to signal the dump-hopper operator.

The low-level control, on the other hand, sounds two alarms--in mixing and dump-hopper areas--when flour drops below second probe. At all times, there is enough flour at hand for ten batches.

Centralized scaling may be carried out either manually or electronically. Flour can be transferred from any of three storage bins to three dough mixers and flour-dusting hopper via the 600-lb.-capacity scale and 700-lb. surge hoppers. The 300-lb. dusting hopper not only assures foolproof inventory of dusting flour, but also collects flour for periodic checking of weights in scale hopper.

Manual transfer, for standby purposes, is carried out in this manner:

Operator sets scale-hopper beam to desired weight, and phone-dials flour from one of the storage bins. If, for example, he dials "one", flour from No. 1 bin is on call, and a light is flashed on a second control panel to indicate the bin signaled.

Next, operator presses a button that positions a series of diverting valves (to and from bins) according to specific sequence. A second 15-hp. blower then automatically purges the line. Next, a vibrator (Syntron), attached to the slope of the conical bin, is actuated and a solenoid opens to supply 5-psi. air to six aerators (Bin-Flow, Bin-Dicator Co.) mounted on the cone-bottom section of the silo.

Injected air aerates bin-packed flour to make it flow more readily. Aerators are of the non-clogging, fabric-diffuser type.

Electronic Scaling

Our trick is to use a suspended load cell that converts force exerted on it to a proportional electrical signal. This, in turn, is cable-transferred to a remote instrument-control panel. Load cell comprises four sensitive strain gages in a hermetically sealed housing. Unit is compensated for a 15 to 150F. temperature range. Attached to scale beam, it accurately weighs flour being scaled into hopper.

Manual and electronic scaling are remotely performed from the same instrument panel. At its front are digital pre-sets for storage bins, with control knobs for units, tens, and hundreds. Operator merely sets the desired figure, then presses a button to deliver flour from bin to scale hopper.

In sequence, the blower starts its purging cycle. Then, the rotary feeder, vibrator, and air solenoid each operate before flour is transferred to scale hoppers.

Load cell detects the weight and, when pre-determined batch of flour has been scaled, flour flow stops and purging cycle begins. Then, flour is automatically delivered to scale hopper from second and third storage

After three types of flour have been supplied to scale hopper, blend is discharged into surge hopper. Mixer which is to receive flour is dial-selected from control panel, and bins respectively.

flour delivery is effected as in manual transfer.

We can also aerate flour in the same bin, aerate-transfer it from bin to bin, or blend various types from one bin to another. Flour flow is set at 2½ lb . per sec. in order that accurate amounts may be bin-blended with a timing device. Residual flour in a bin can also be aerated as well as accurately blended with other types.

Another rotary valve (½-hp. motor) is used to transfer flour from bin to scale hopper. When latter is full, feeder stops and a diverting valve above hopper is positioned so that residual flour in pipelines is purged into storage bin. Sequence is repeated by transferring flour from other bins to obtain the particular blend desired.

When cycle is completed, pilot light on control panel indicates blend is ready for discharge to pre-selected dough mixer. Operator then presses a discharge button releasing flour from scale hopper, through two air-piston actuated butterfly valves, and into surge hopper. Immediately, another scaling sequence is established.

Depending upon type of dough mixer receiving scaled flour, bowl or door is automatically set to closed position by Micro Switches, and inlet gate is opened. At this moment, a signal light above mixer indicates that mixer is ready for receiving. Operator now remotely dial-selects mixer and pushbutton-energizes an auxiliary 5-hp. blower (600 cfm.) to create negative pressure in line and inside of mixer. This prevents flour from seeping out of the mixer.

After a 10-sec. interval, mixer-filler blower (300 cfm.) begins a 15-sec. purge, and rotary feeder below surge hopper delivers flour to mixer. Meanwhile, another batch of flour has been scaled, and is ready for next mixer.

A timing device controls flour delivery into mixer. Then, diverting valve above mixer is positioned for straight-through flow, and a 15-sec. purging cycle begins. As mixer is being supplied with flour, in a turbulent manner, flour dust is automatically discharged through diverting valve and returned to surge hopper by auxiliary blower (when operating to maintain negative pressure).

Ingenious Flour Transfer

Conventional way of emptying storage bins to clean them and conduct major maintenance is to transfer flour to dough mixers through scale hopper, which is limited in capacity.

However, we've designed a flexible and more efficient method of transferring flour—without conveying it to scale hopper and dough mixers. Not only that, we've also engineered the system for foolproof aerating, blending, and transferring of flours.

To control bin-to-bin transfer, a series of nine relays has been installed, each performing a cycle by properly diverting valves and positioning equipment. For example, relay No. 1 sets up the cycle for circulating flour from bottom to top of bin No. 1. Eight other relays permit recirculation in any unit and transfer between any two bins.

Safeguards Galore

Operating efficiency is further insured by these six elaborate safeguards:

1. All transfers are accomplished by remote control—like phone-dialing a number at home. Operator need only dial a number from 1 to 9 and press a pushbutton to aerate-circulate a batch of flour, or to transfer it.

2. A photo-cell installed in a Lucite sight-glass section of the transfer line automatically stops rotary feeder when bin is empty. Then, in sequence, line is purged and blower shuts off.

3. An interlocking system monitors all flour-handling operations—circulating, transferring, and supplying mixers. Once a number has been dialed, further dialing does not interfere with charging of bins or mixers. Thus, operators can't disrupt flour transfer or mixer charging in progress. Pilot light adjacent to dial on control panel is "on" when system is in operation, and it goes "off" to indicate that another operating sequence is ready for dialing.

4. Beyond each air blower, two pressure switches protect the system from diverting-valve failure or excess accumulation of flour in pipelines. Normal pressure of moving flour is 10 lb. and, should the pressure go beyond, switches automatically stop the conveying system.

5. All electrical controls and interlocking relays are protected from dust, or misuse by unqualified help, through installation of an isolated control center (Cutler-Hammer). Keys are given to qualified personnel only. Centralized at this center are all magnetic starters for motors operating the flour-handling system.

6. All electrical wiring and flour-handling pipelines are color-coded so that they can be easily located for inspection while system is in operation.

For example, lines from dump hopper to storage bins are colored green. Those from blower to rotary valve feeding storage bins are coded brown.

Electric switches and conduits are painted orange. Where wiring (installed by Progress Electric Co.) corresponds to pipelines, it's painted the same color, connected to terminal boxes, and numbered. —*End*

How National Grew

There are two principal reasons for National Baking Co.'s success—superior product quality and top customer service. And behind these factors are advanced cost-cutting machines and techniques.

The company recently moved into a new single-story $2¼ million bakery with 100,000 sq. ft. of space. And there's another 100,000 sq. ft. available for future expansion of facilities.

The plant is now geared to produce 1¼ million hard rolls daily on one line. And it has three additional lines to handle 40,000 loaves of bread, 600,000 soft buns, and 35,000 brown 'n serve rolls a day.

Customers include hotels, restaurants, clubs, hospitals, airlines, railroads, department stores, and chain and independent outlets.

The new bakery is ideally located adjacent to a railroad and the Congress Express Highway (11 min. west of the loop). It can easily serve a 40-mile radius in about a half hour.

SON & FATHER PARTNERS—Vice-President M. and President J. E. Glyman—check first runs of rolls coming from oven in new $2¼ million bakery.

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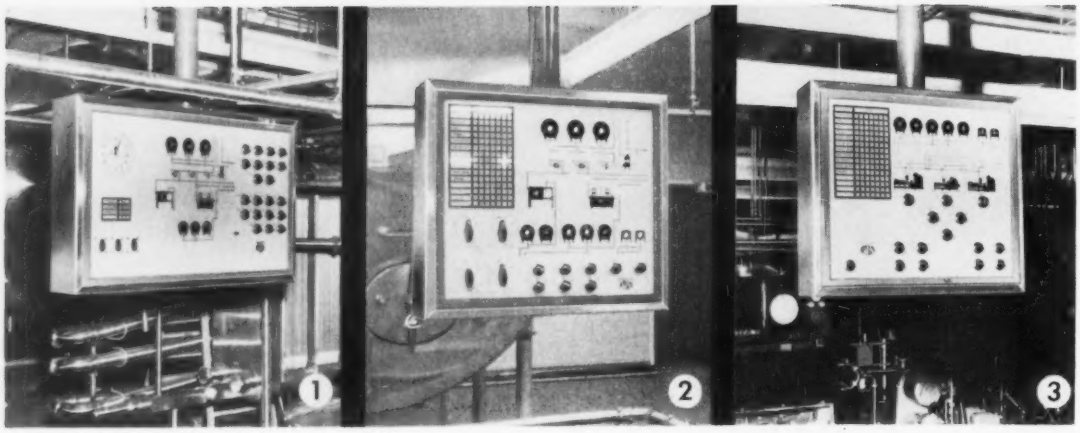


FROM NEW semi-graphic panels at key process areas, flow of a variety of dairy products is automatically controlled without danger of intermixing. In order, photos show stations from which product flow is remotely controlled: (1) Ultra-high temperature pasteurizing; (2) high-temperature, short-time pasteurizing; and (3) filling.

Teams CIP With Process Control

Complex flow of 15 products monitored by 3-man crew. Secret: New semi-graphic area process panels and advanced control of cleaning-in-place

WITH THE AID of ingenious innovations, processing is being remotely monitored at Grocery Dairy Co., Grand Rapids, Mich. And with substantial benefits.

Air-operated sanitary valves make it all possible. But first a special control had to be developed to clean the valves in place. And a simplified "area" control system, using a new type of semi-graphic panel, had to be worked out.

If it weren't for CIP, it wouldn't be practical to employ the new remote air-operated process control valves. They'd cost too much to clean and become damaged as a result of repeated dis-assembling.

But the valves can't be satisfactorily cleaned in a manually controlled CIP system. Too many operations—rinsing, washing, and sanitizing, as well as controlling temperature, holding time, and concentration of detergents—must be coordinated with operation of the valves.

To accomplish these functions meant that more extensive controls had to be engineered into the CIP unit to make it completely self-operating.

Sought was a program controller that was:

1. Of a multiple-function, multi-step type that would control many circuits and would turn them on and off several times.

2. Simple enough to operate and maintain by dairy's own personnel.

3. Dependable and ruggedly construed to withstand dairy-plant operating conditions, especially extreme temperature and moisture.

4. Able to simultaneously actuate functions. *Coordination* is of prime importance inasmuch as circuit changes must take place instantly and without delay to prevent line hammering.

5. Easy to install as well as simple to set or alter.

6. Flexible enough to meet changes, such as adding equipment and lines.

7. Designed with few parts that are easy to obtain and inexpensive to stock.

8. Relatively inexpensive in terms of number of functions applied.

Problem, then, was to find a way of cutting functional cost, increasing flexibility, and assuring *coordination*.

Solution? Installation of two low-cost 30-function, 120-step industrial timers (Tenor-designed) operating on instant stepping principle with either fixed- or variable-interval times between steps. Programming is accomplished by inserting plastic pins in perforations on timing drums.

Essentially, one timer controls CIP unit, while the other controls valve operations so as to attain greater operating flexibility. Both timers are interlocked so that they don't get out of phase.

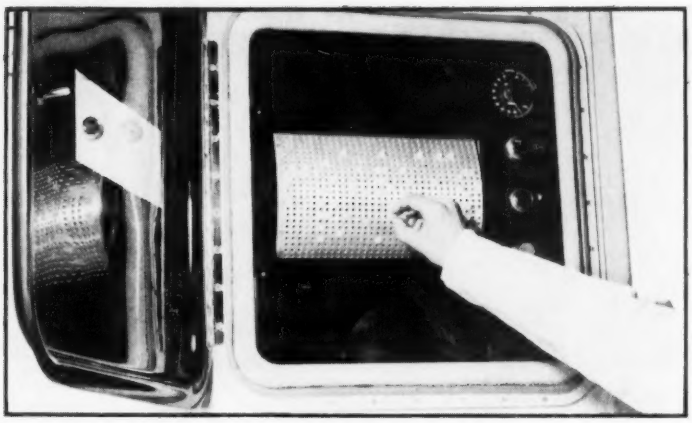
Valves in Process Control

With CIP-control solved, Grocery Dairy was faced with another problem: How to actuate remote operation of valves during processing.

A central control panel would do it. But here communication presented a complex problem. Panel lights would indicate position of valve plungers and whether pumps

E. SCOTT WELCH, JAMES ROBERTS, and JOHN V. ZIEMBA

Respectively, President and Secretary-Treasurer, Tenor Co., Inc., Milwaukee, and Associate Editor, "Food Engineering"



THESE TIMERS key multi-programming of 4-circuit CIP system that's automatically and remotely controlled for efficient, low-cost cleaning. Programming is accomplished by inserting plastic pins in perforations of 30-function, 120-step rotary timing drum.

were "on" or "off". But Grocery Dairy's installation involves so many valves that a central panel would be large, crowded, and complicated.

Practical answer was to install three separate panels at points of greatest activity.

Each panel is of a semi-graphic type that shows main elements in area operation. This takes care of simplified communication problem. These panels can be inexpensively changed in the field.

Each panel comprises stainless steel housing, acrylic resin facing, process flow chart, selector switches, product-location communication chart, and rear-panel illumination. Latter lights up to identify products in tanks, operation of key units, and product flow.

When selector switches are positioned, lights also flash on the other panels' product-location chart. This way, operators see what lines are in use and exercise precise, instead of haphazard, control over operations.

Secondary (non-critical) information is relayed by light signals or word-of-mouth.

First-floor panel is located adjacent to ultra-high temperature pasteurizer. It schematically shows milk storage and surge tanks, UHT and 2nd-floor HTST pasteurizers, pumps, valves, and product-location.

Monitored from it are:

1. Raw milk from bulk tanks through separator. Here, skim is pumped into any of three 6,000-gal. tanks for standardizing and cream to byproducts operations.
2. Standardized milk from storage through UHT unit.
3. Milk to ice cream production.
4. Ice cream mix through UHT unit and back to storage.
5. Pasteurized products from UHT to three 4,000-gal. surge tanks.

Second-floor panel is mounted near HTST unit. On it appears a similar diagram of process flow, except for the addition of two 400-gal. and two 1,000-gal. surge tanks and a 10-product location chart.

Controlled from this point are flow of milk from three storage tanks (6,000 gal.), byproduct mixing, pasteurizing byproducts, and transferring them to four surge tanks.

Third panel is spotted near three 1st-floor Pure-Pak fillers. Mounted on it is a schematic of product flow from seven surge tanks to filling machines as well as a 15-product, 7-tank (surge) communication chart. Thus, operator knows what's in surge tanks, since they've been light-identified by 1st- and 2nd-floor panel operators on their product-tank communication chart. And, by flicking selector switches, he remotely opens and closes air-operated tank outlet and filler header valves.

Plans are to extend this system to ice cream making and other byproduct operations.

With respect to process flow, installation of new semi-graphic panels has permitted Grocery Dairy to:

. . . Obtain accurate, reliable and simple process control through operation of remote valves.

. . . Assign clear-cut responsibilities to operators in three key areas. Eliminated is the danger of intermixing products from different departments.

. . . Enable each operator to remotely control valves that direct product flow over a maximum of 60-ft. of pipelines. This saves up to 600-ft. round trips formerly required with hand-operated valves.

. . . Speed operations and insure better coordination of process flow.

. . . Get more production out of operators and simplify their duties.

. . . Shorten break-in training time. After about 45 min. of instruction, operators were able to manipulate valves they couldn't see.

. . . Make inexpensive field changes on graphic panels in event of future process improvements or alterations.

In-Place Cleaning Hookup

Remotely operated from a central panel board, on which are mounted timers and temperature recorder-controller, are pneumatic valves and CIP unit. Latter contains detergent-feed and solution-recirculating pumps, valves (steam, water and drain), 2-pen temperature controller (for detergent and rinse water), and pilot lights (indicating proper CIP hookup).

Panel is also equipped with a 4-position switch to set selected, programmed cleaning cycle and interlock system. Positions are set to clean: (1) Three 6,000-gal. tanks (to be extended to surge and over-the-road bulk tanks); (2) byproduct mixing-tank lines in a single-loop circuit; (3) raw milk supply lines and intake system; and (4) lines from pasteurizers to fillers.

Say, for example, switch is set for No. 1 (tank cleaning) position. Then, automatically, proper temperature, concentration, and flow of detergents, as well as rinse-water temperature and flow, are assured. In-line cleaning in the other three switch-selected circuits is programmed for their own temperatures, times, detergent concentrations, and rinse combinations.

And there are interlocking points at: (1) Hookup of cleaning solution tank's inlet to tank selected for cleaning, (2) connection of cleaning solution return line to tank, and (3) tank that must be empty.

The CIP unit consists of four pumps (¼ hp.) that are "on"-and-"off" program-controlled to meter alkali, acid, sanitizer, and activator (wetting agent and scale eliminator) into the cleaning solution. Unit also has recirculating pump (7½ hp.) and valves (steam, water, and drain).

—*End*

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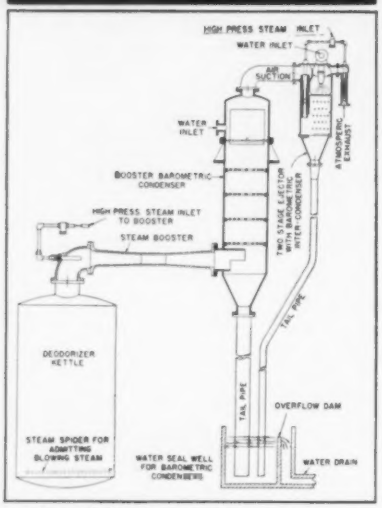
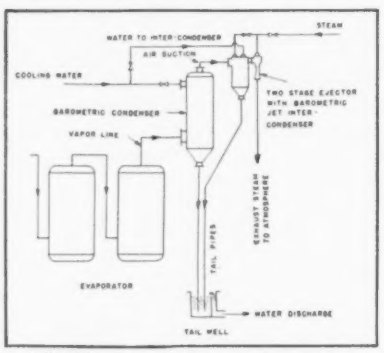
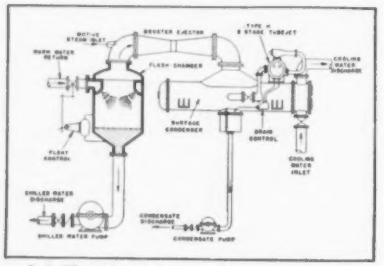
C. H. WHEELER



In Deodorizing Operations—C.H. Wheeler Tubejet® Booster with Barometric Condenser, and 2-stage Tubejet with Wheeler Barometric Inter-Condenser, produce high deodorizer vacuum. No moving parts means less Tubejet maintenance.



In Evaporation, Tubejet Ejector works with Wheeler Barometric Condenser to produce high vacuum. Initial cost of Ejector is low installation easy because of lightness, simple connections.



C. H. Wheeler Steam Jet Vacuum Refrigeration is used extensively in producing cold process water for food and chemical plants. Where there is an abundance of steam at low pressure and cooling water for the condensers, this is an ideal way to produce chilled water at low cost, with trouble-free equipment.

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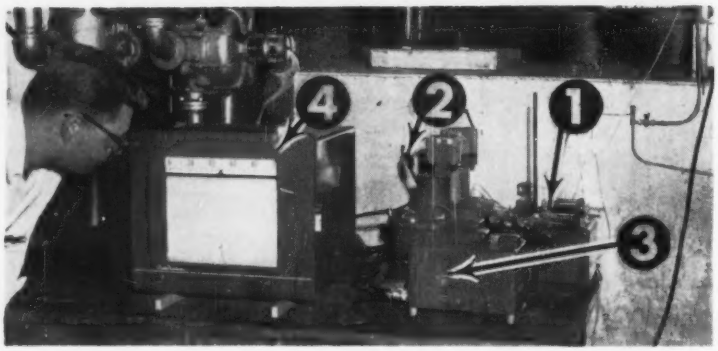


AUTOMATIC CHEMICAL ANALYZER monitors evaporator condensate for critical trace of sugar in refinery operation. Precision modular unit employs sample-reagent proportioning pump (1), heating baths (2), colorimeter (3), and recorder (4). The standard analytical assembly also includes a dialyzer, but is not required for this sugar determination.

Foods Analyzed—*In-Stream*

New instrument continuously checks product, records data, actuates controls

PROCESSORS seeking to sharpen their control of product quality—and of production costs—now have a potent and versatile tool in a unique instrument system.

Specifically, the unit automatically performs dynamic chemical analyses right on the production line, records the data, and actuates various process controllers. By monitoring actual food composition directly, rather than physical variables that may be related to quality factors, this instrument is seen sparking the industry's next major advance toward total in-stream quality control.

Furthermore, the system greatly speeds, simplifies, and ups the precision of laboratory quality-control routines, such as raw-material inspections. Once supplied with the sample—which need not be measured—the instrument acts as an 'automatic chemist', pinpointing material concentrations down to parts-per-billion with extreme accuracy.

Typical determinations include sugars, salts, acids, vitamins, esters, gases, and trace elements.

Speed and accuracy of the unit (Autoanalyzer, Technicon Controls, Inc., Chauncey, N. Y.) depends upon eliminating absolute measurements. Instead, it places all determinations on a comparative or ratio basis. Thus, reactions need not be carried to completion.

For a particular analysis, the unit is first calibrated with reference standards. Then, unknown samples are subjected to identical analytical conditions, which insures precise reproducibility. Results are recorded as percentage of product composition.

Instrument's first food-industry application (photo) is at Refined Syrups & Sugars, Inc., Yonkers, N. Y., where it continuously checks for excessive sugar concentration in evaporator condensate returned to boilers. This in-stream control provides these three significant advantages:

1. It maintains high steam-generating efficiency by preventing foaming and priming in boilers, and carryover that could damage steam turbines.

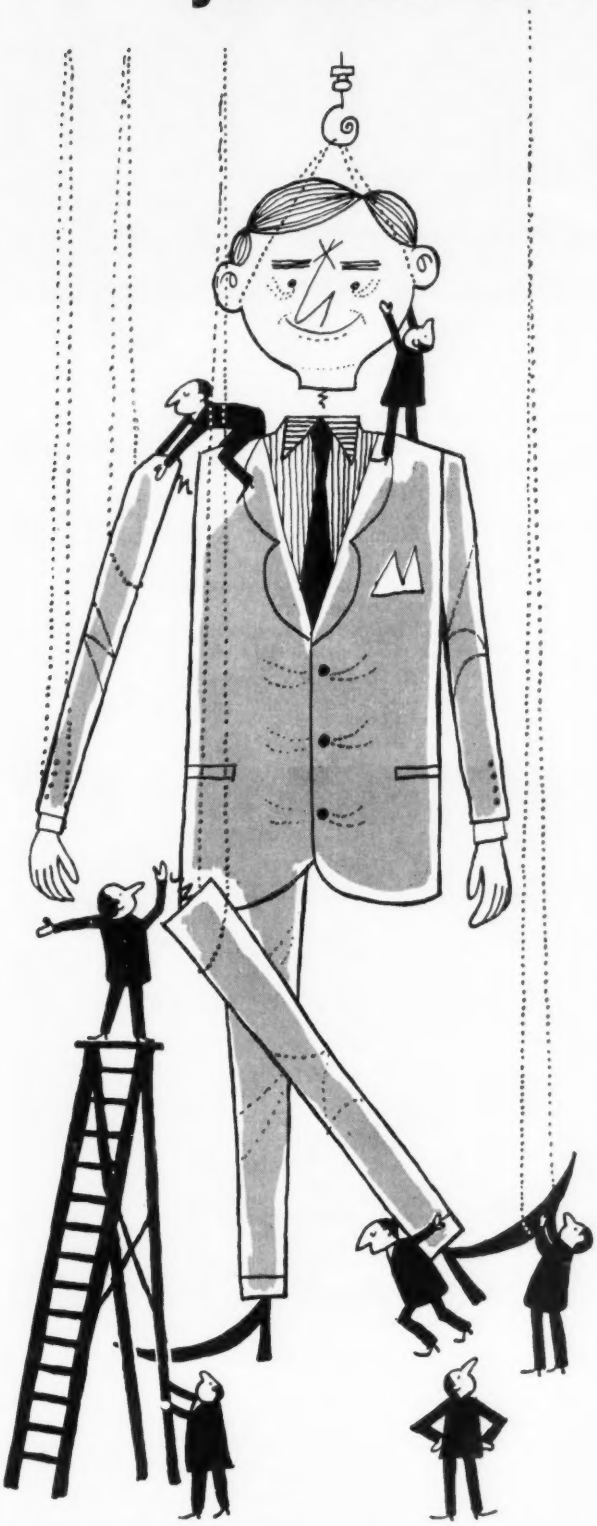
2. Curbs loss of treated water, along with its heat and sugar contents.

3. Enables prompt detection of leaks in vacuum equipment.

Set to indicate 0-25 ppm. of sugar in the condensate, the unit analyzes the stream within 4 min. and charts the results. Ultimately, the recorder will actuate automatic diversion valves for disposal of any contaminated condensate.

Furthermore, the company is exploring other applications for this instrument; namely, in-stream control of syrup composition, and curbing loss of sugar by entrainment in evaporators. —*FE Staff*

Managers aren't born you make them!



Potential business leaders, like star ballplayers, may come into this world with the ingredients and instincts for success. But some understanding soul has got to sweat over them, and train them.

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The New Jones CMH (constant motion horizontal) cartoner was operated at 124 cartons per minute on one of Seagram's Christmas gift package lines. Operators loaded Seagram's Seven Crown fifths into a tuck carton at the rate of 57,600 in an 8-hr shift.

The CMH cartoner applied a strip of glue to the bottom end panel prior to closing the flaps to provide additional package security. The carton was sent through two overwrap machines for the foil and cellophane overwraps.

Advantages of the new Jones CMH:

- Automatic operation except for hand loading the product into the carton.
- Positive carton feeding and opening which incorporates the use of the separator blade and opening knife found on Jones' fully automatic CMC machines.
- Positive rotary tuckers used to close tuck or lock-end cartons reliably.
- Glued end or thermosealing cartons can be accommodated on the CMH.
- Fits floor space as small as 15-ft x 2-ft 8 in.
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Automatic carton feeding, opening and closing. Operator merely loads carton. Loading area can be designed to accommodate one operator or several.

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Puts Draught Beer in Cans

Bacterial filtration, asceptic filling in pressurized room obviates need of flavor affecting heat treatment

RETENTION of true draught flavor in a canned beer having reasonable shelf-life is the twin-benefit achievement of a striking new canning procedure recently instituted by Adolph Coors Co., Golden, Colo.

Operating in conjunction with its aluminum can making project (p. 58), the company employs an elaborate sterilizing, filtering, and filling system in place of conventional pasteurization. Result is a beer that tastes just like that drawn from a tap.

How System Operates

Cans are trucked from the manufacturing building (Coors expects to have direct feed later) and placed on an unscrambler that feeds them to a sterilizer. Here, they are conveyed through hot water sprays that wash and heat the cans, then through live steam (total exposure about 5 sec.). Next, they are cooled by spraying with sterile cold water, then fed to the filler.

This unit is installed inside a white-tile-lined room where numerous provisions are made to insure sterility. Among these are:

1. Ultraviolet lamps (5) placed so that their rays bathe both equipment and walls.

2. Positive pressure of sterile air that prevents ingress of outside atmosphere. Air fed to room is blown through filters, then passes a Westinghouse Precipitron.

Filling Operation

On its way from storage to filler, the cold (35F.) beer is forced through a special bacterial filter. Unit comprises 20 pads arranged perpendicularly, resembling an accordion. Pipeline pressure of 15-18 psi. is raised about 5 lb. by a pump to force the beer through the filter.

A German filler (Seitz), which is specially designed for steam sterilization, handles the 7-oz. aluminum cans at 120 per min. This unit and the filter are exposed to a flow of steam for 2 hr. in advance of the filling operation.

Next comes closing. Here, an elaborate setup was devised to insure sterility of the covers. First, the stack of lids is jacketed in live steam. Then individual ones are surrounded by steam from three jets as they move into position on the can.

Finally, closed cans are conveyed from the filling room to a packaging area.

At present, Coors recommends holding the canned beer at 35F. and consuming it within a month. Based on storage experiments, however, the company anticipates that the beer will last indefinitely whether refrigerated or not.—*Frank Pitman, McGraw-Hill News, Denver*

New features in an all new FEEDER

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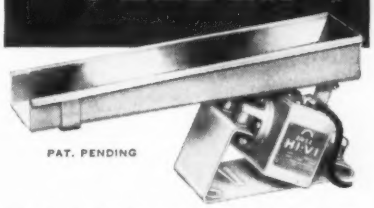

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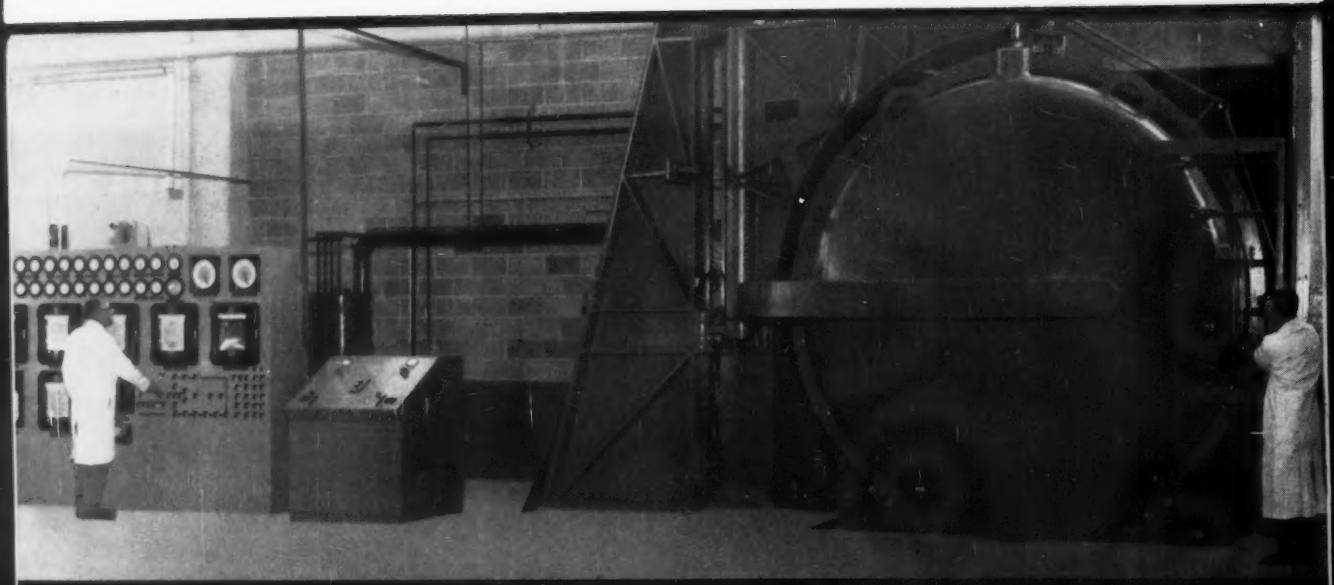
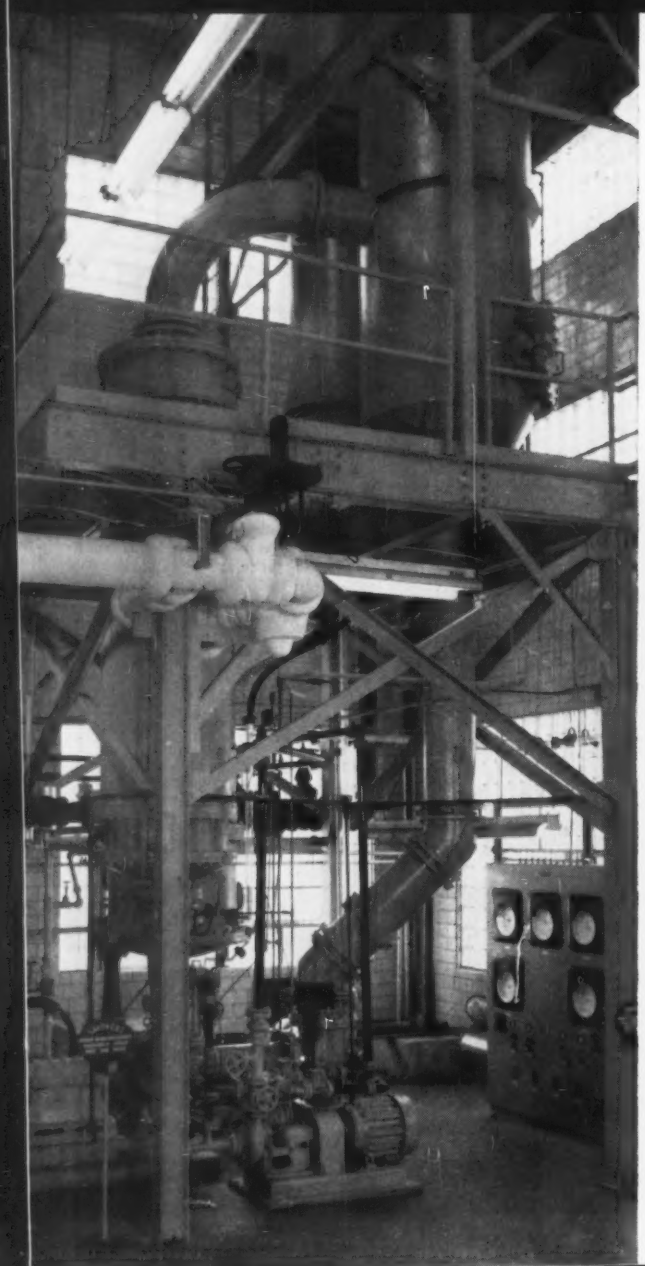
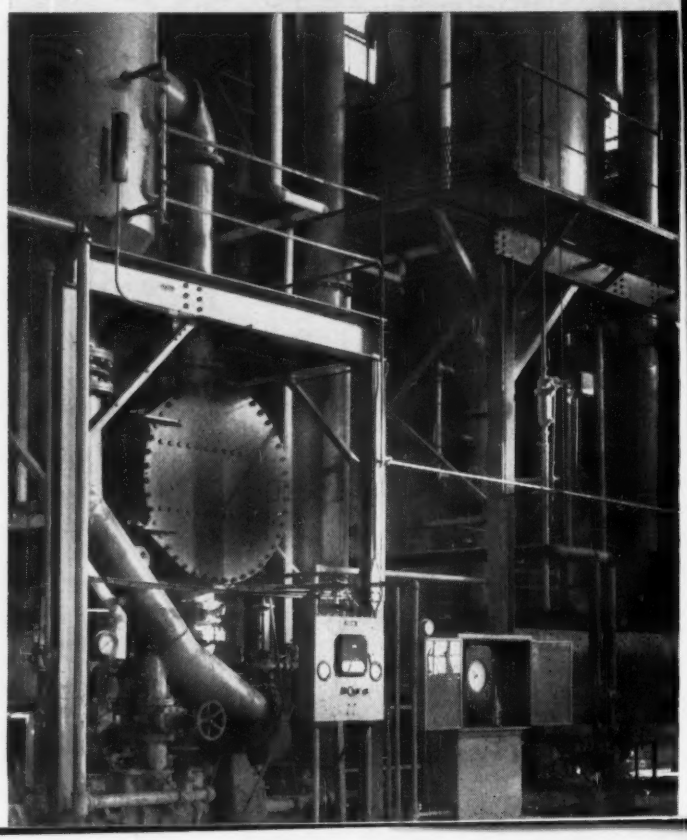


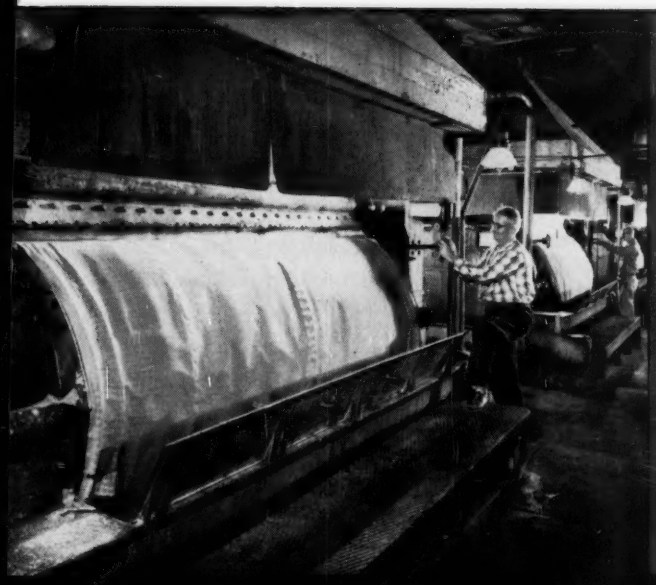
Twin Coach Aircraft Division controls this metal bonding autoclave entirely automatically. Quick Opening Doors speed operation.



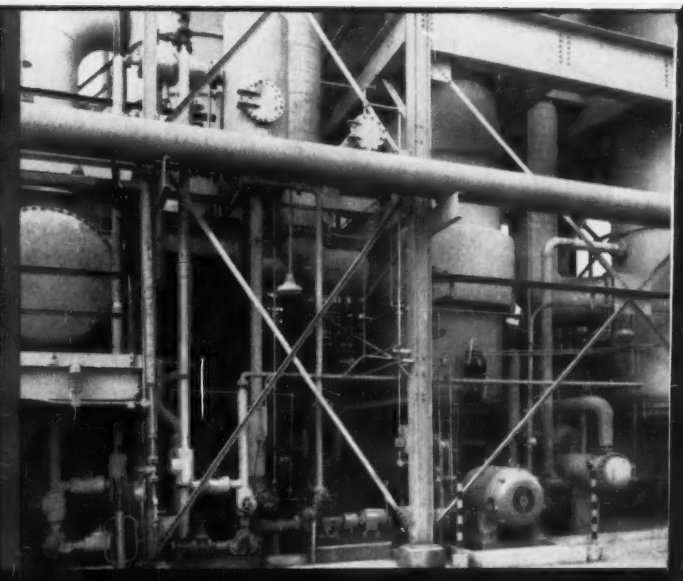
Hercules Powder uses an acid resistant, forced circulation evaporator to concentrate highly corrosive protein solution.

Fish Products utilizes two evaporators to recover vitamins and protein solids from fish oil waste.





National Distillers produces livestock and poultry feed from distillery grain residue by continuous drying with Buflovak double-drum dryers.



Shell Chemical gets dependable glycerine concentration using less power with combination forced and vertical concentration evaporators.

Buflovak engineering pays off for progressive processors

Buflovak research solves the toughest processing problems

Buflovak has the best equipped laboratory for analyzing problems in drying, evaporation, extraction, solvent recovery crystallization and food engineering. Products can be tested by the beakerful or run in carload lots on a full production schedule. Over 7,000 tests have proven for hundreds of companies that product research is the sure way to profits.

Skilled engineering provides the right equipment for the job

Because the line is complete, Buflovak engineers can impartially recommend the right equipment to meet specific job requirements . . . basing their selection on known specifications, or on the results of special research. Whenever custom units are needed, Buflovak has the design know-how and production facilities to follow through.

Industry's most modern units upgrade products, improve operations

Dryers, evaporators, flakers, autoclaves, kettles . . . all the units in Buflovak line incorporate advanced design features developed by extensive product research. On schedule delivery . . . superior performance . . . low operating costs . . . and capable, available service are all part of the Buflovak program to build customer profit.

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Yeast Species Predominate On Antibiotic-Treated Birds

Poultry treated with antibiotics may develop a flora on their surfaces in which yeasts are the predominant species.

On chicken halves treated with chlortetracycline (CTC) and oxytetracycline (OTC) by immersion in 10 and 15 ppm. solutions, respectively, the yeasts isolated belonged to three genera: *Rhodotorula, Torulopsis,* and *Cryptococcus.* Oxytetracycline increased shelf life by 5 days at 38F., CTC by 8 days. There was less effect at 50 and 54 deg. None of the untreated birds had spoilage flora predominantly yeasts.

Number of yeast cells per sq. cm. varied widely, but the range was 1 to 100 million in CTC-treated birds, 100,000 to 100 million on OTC-treated carcasses, 10,000 to 100,000 in untreated poultry. None of the yeasts found were sporeformers, and none were pathogenic.—*Applied Microbiology* 6 (6), 420-21, 1958.

Silica Dusts Kill Insects Fast

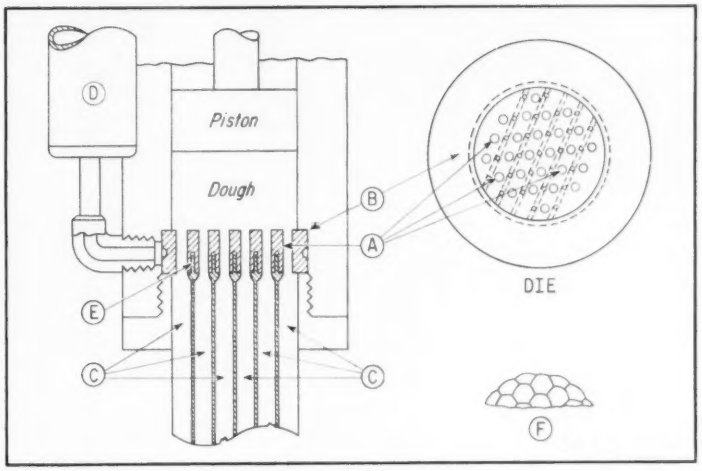
A new approach to pest control, application of silica dusts, has proven effective in both laboratory and field tests. And since no biochemical action is involved, insects should not be able to develop immunity.

Two synthetic dusts—silica gel and silica aerogol—proved most effective. When applied in small quantities, the finely ground (.02μ dia.) dusts absorb the waxy, oily layer that covers insects' bodies. Deprived of this coating, they lose vital body moisture and dry to death.—*Chem. News,* (Mfg. Chemists Assn.), Dec. 31, 1958.

Improved Culinary Mix

Incorporating liquid shortening into flour, by atomizing the supercooled oil in particles ranging from 0.07 cc. to a fog, is crux of a recently patented process for preparing a culinary mix.

An additional feature is continuous agitation and overturning of dry ingredients to renew surfaces on which particles of shortening impinge, so that the discrete particles are thoroughly mixed and distributed.—U.S. Patent 2,835,588, May 20, 1958.



Machine Produces Ready-To-Eat Cereal Of Distinctive Honeycomb Appearance

Cereal wafers having the appearance of a honeycomb outlined in color are the object of a recently patented process and equipment.

In the operation, cooked dough is extruded through holes (A in drawing) in plate (B) that divides it into a large number of filaments (C).

As filaments are formed, they are coated with a color-flavor solution which flows from reservoir (D) through apertures (E) in plate (B). Then the filaments are brought together to form a cylindrical mass in which their identity is maintained by the coloring material.

Dough cylinder is then dried sufficiently to permit slicing into thin wafers. When these are subsequently heated, each filament puffs out, forming a flake in which the color outlines their honeycomb-like shape (F in drawing).

In a typical example, dough was prepared from following ingredients (by wt.): Yellow corn cones, 1135; sugar, 125; salt, 25; FDC yellow dye, 1; water, 700.

This was cooked for 1¼ hr. at 212F. with reflux to maintain constant moisture, then for ½ hr. without reflux and with vent open to give product of 30-35% moisture.

When this dough was extruded through die, filaments were coated with a solution contaning (by wt.) FDC Red No. 2, 0.6; honey, 33.2; water, 66.2. Resulting dough cylinder was dried to 8-10% moisture, sliced into wafers and puffed in radiant oven to form cereal flakes. —U.S. Patent 2,858,219, Oct. 28, 1958.

Gets Gluten Continuously From Wheat Flour

Production of wheat gluten continuously in a pilot plant employing the batter process also yields starch and a soluble fraction containing proteins and sugars.

Flours milled from different types of wheat have been processed successfully with protein recovery as gluten greater than 80%. Cost of processing 1 lb. flour is estimated at 0.27c.

The wet gluten is dispersed in dilute acid and dried on an atmospheric drum unit. Cost of this step is 4c/lb. dried gluten.—*Paper by R. A. Anderson, at 3rd Annual Wheat Utilization Research Conference, NURDD, Peoria, Ill. Sept.* 1958.

(Turn page)

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GREEN HYCAR, for picking and sorting tables, in 3 ply only.

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Vitamin C Relatively Stable In Natural Fruit Drink

In an orange "squash" of pH 2.5, prepared with orange juice, 26% sucrose, and 1¼% oil of orange, preserved with 350 ppm. SO_2, there was little loss of original potency of 32 mg./100g. vitamin C during the first 9 months of storage; 50-60% remained after 18 months, and 40% after 2 yr.

No difference in the rate of deterioration was found in samples stored at 32F. and at room temperature, but at 100F. deterioration was accelerated.

Light had no effect on the stability of the vitamin. Concentration of the ascorbic acid had no measurable effect on the deterioration rate, but there were unexplainable bottle-to-bottle differences in the decrease.—*J. Sc. Food & Agr.*, (9)11, 754-60, 1958.

1-Year Concentrated Milk

Frozen concentrated milk that can be kept as long as 1 yr. is object of a recently patented process. Crux is concentration in a falling film evaporator at 110 and 150F. with a heating medium not higher than 180F.

In the process, raw whole milk is pasteurized at 172F. for 16-23 sec., homogenized, then concentrated in vacuum of 22.3-27.3 in. Hg to desired solids (34 or 43½%).

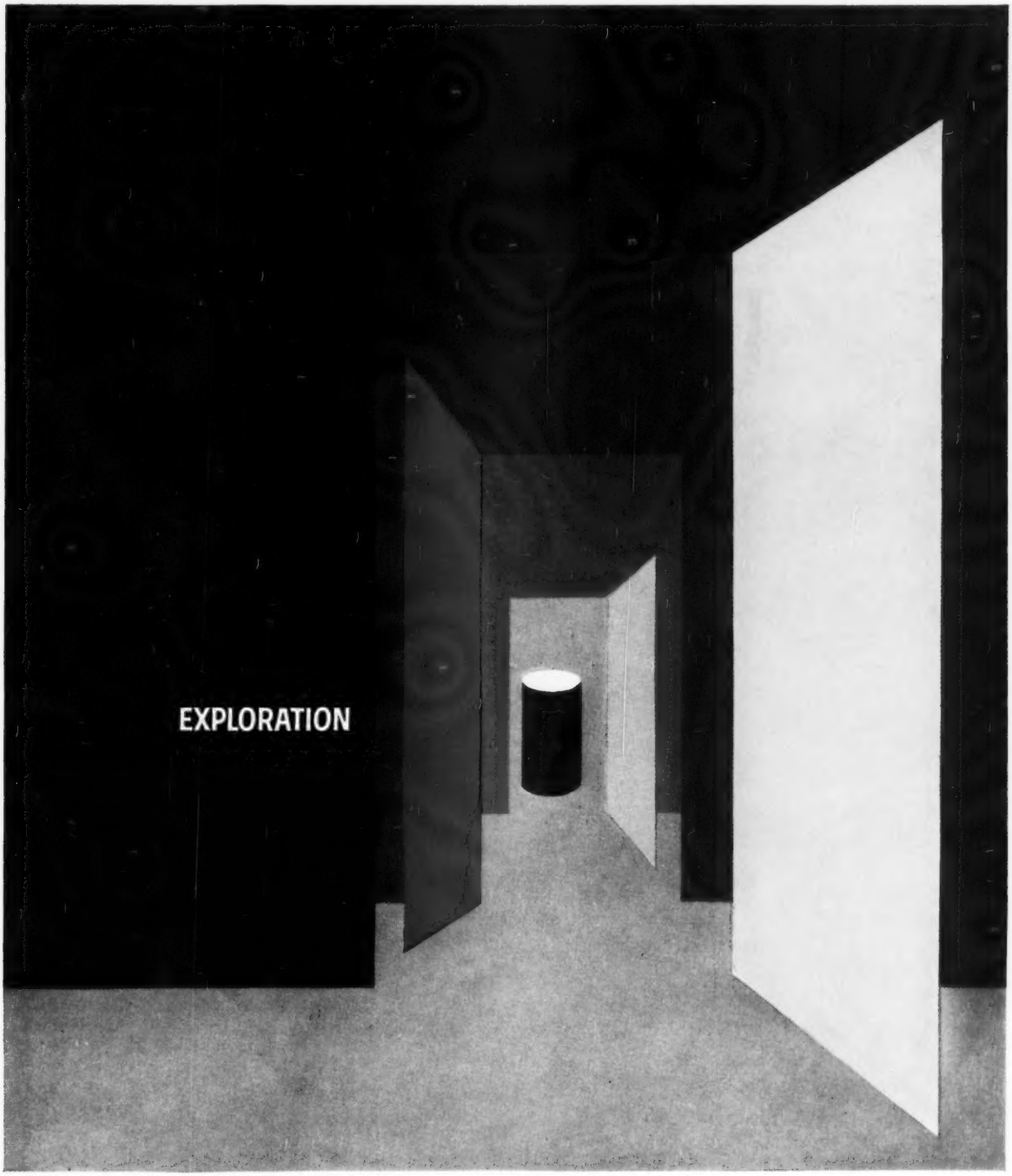
Concentrate is flash-cooled to 35F., then slush-frozen at 25F., packaged (preferably 6-oz. cans), stored at 10F.—U.S. Patent 2,860,-988, Nov. 18, 1958.

Evaluating Beer Foam

Although quantitative evaluation of beer foam quality has been studied for over 20 yr. no universally accepted method of designating it has been found.

The "foam half-life" or sigma value of Ross and Clark has probably been most widely used. It may be obtained by using a platinum spinneret having 48 holes 0.07 mm. in dia. to generate foam at constant CO_2 pressure in 150 ml. of decarbonated beer in a water-jacketed measuring cylinder.

When foam volume reaches 600 ml., CO_2 stream is shut off and



A really significant advance in canning technology calls for patient minds eager to explore every possibility. For the people at Canco, this constant search for new and better ways has long been a successful habit—proved by Canco's many canning "firsts." That's why a close working relationship with Canco can help you to a more efficient operation, *a more salable product.* Explore the benefits of Canco's alert, imaginative service by calling our nearby representative!

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at Johnson's Supermarket

. . . with the help of the Ætna Life's Business Planning Department

When Fred Johnson died last year his thriving supermarket didn't have to go out of business. The cash registers kept right on ringing up sales . . . because Mr. Johnson was a progressive and foresighted man.

With the help of their Ætna Life representative, attorney and accountant, he set up a plan which gave his wife in cash the full going concern value of the business. This same plan provided for a smooth transition of the ownership to two of his key employees – avoided financial chaos in the business and disaster to his own family.

If you own or operate any kind of business, it will pay you to investigate the vital need for a business continuation plan – and no one is better equipped to serve your interests than the Business Planning Department of your local Ætna Life General Agency.

ÆTNA LIFE
INSURANCE COMPANY

Affiliates: Ætna Casualty & Surety Co. • Standard Fire Insurance Co. • Hartford, Conn.

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collapse of foam is timed. Sigma value is then calculated from the formula:

$$\Sigma = \frac{t}{2.303 \log \frac{b+c}{c}}$$

in which b = beer volume of foam; t = collapse time in sec., and c = volume of uncollapsed foam after t sec. The larger the sigma value the better the foam.

Beers of sigma value 100-119 have poor foam quality; 120-139 is considered average, 140-160 indicates good foam quality. — *Brauwelt* 98(37) 666-71, 1958. (In German)

Viscosity of Chocolate By New Equation

Chocolate flow properties have often been considered to follow the Bingham model of rheological behavior in which rate of shear, plotted against stress, yields a straight line that does not pass through the origin.

When such plots were made on samples of couverture, using Rotovisko and Ferranti viscometers, flow curves were not linear. This indicated that the Bingham hypothesis does not explain completely the viscosity behavior of chocolate.

As an alternative relation between square root of stress and square root of rate of shear is proposed. This yields a straight line when plotted, and agreement among several types of viscometers is good, even for shear rates as low as 0.05 sec.$^{-1}$. Plastic viscosity is measured by slope of lines, and yield value by intercept of line with axis of abscissas. These two values characterize the whole flow curve.

Proposed equation is:

$$\sqrt{D_N} = \frac{1}{K_1}\left(\sqrt{t} - \frac{2K_o}{1+a}\right)$$

in which D_N is the Newtonian rate of shear at inner cylinder of the viscometer, K_o and K_1 are constants, t is stress, and a is ratio of radii of inner and outer cylinders of viscometer.—*Int. Choc. Review*, 13(7), 290-5, 1958. (In English, French & German).

Deoxygenating Granules

Deterioration of potato granules and various dehydrated granular food products can be prevented by deoxygenating the material before it is packaged. This is accomplished by

IN YOUR PLANT...

STOP THESE 10 LOSSES WITH NEPTUNE *liquid* METERS

1

STOP SPOILED BATCHES Get automatic formula control with Auto-Stop meters.

2

STOP WAITING for liquids to creep up to gauge mark. Let the meter do it!

3

STOP MANPOWER LOSS hauling buckets or bags. Meters do the measuring while pumps do the work.

4

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5

STOP BACK CHARGES for rejects. Meters save customers.

6

STOP GUESSING COSTS. With meters you always *know*.

7

STOP HAZARDS of spilled inflammables or messy liquids. Meters keep 'em in the pipe.

8

STOP RECEIPT LOSSES. Meters *prove* any shortages.

9

STOP SHIPPING LOSSES Meter - printed tickets give proof of honest delivery from your plant.

10

STOP CONTAMINATION of liquids...use Neptune Stainless meters.

METERING DOESN'T COST...IT PAYS BY MAKING THESE 10 SAVINGS REGULARLY IN YOUR PLANT.

NEPTUNE DOES ALL THESE THINGS FOR YOU:

- Cuts off flow at preset quantity
- "Memorizes" formulas of repeated batches
- Prints batch tickets showing amount delivered
- Controls pumps electrically
- Measures over 150 liquids...water, oils, syrups, brines, soaps, chemicals, etc.

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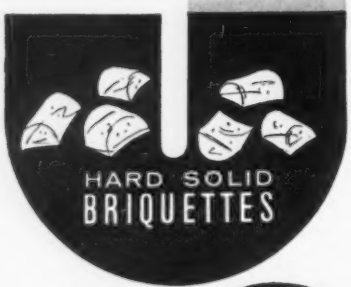

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3 kinds of ICE for every FOOD PROCESSING NEED

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Polarflakes are cold, crisp flakes of ice which expose maximum chilling area . . . chill quickly . . . won't bruise or puncture delicate food products. These crisp ice flakes are easy to handle . . . shake down and blanket the product . . . pack around easily, yet will not arch as the ice melts. The Vilter Polarflake unit brings you a popular type of ice—to be made in your plant, as you need it—at costs far below purchased ice.

Polarflake Ice Maker—3 to 5 ton capacity.

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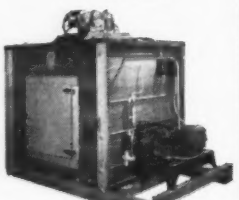
Pakice is clean, pure ice in crystalform. It chills quickly and efficiently. Pakice has preference in certain industries, for instance, where a mixture of ice and water can advantageously be pumped. Pakice is available both as a crystalform and briquette type of ice. Pakice briquettes are scientifically designed so that there is a minimum of contact. As a result, they pack closely and yet allow free passage of air over their surface.

Consult with Vilter specialists for your complete icing and refrigeration needs.



Vertical Pakicer—1 to 6 ton capacities. Horizontal Pakicer—10 to 30 ton capacities.

Write for free copy of these helpful bulletins to The Vilter Manufacturing Company, Dept. E-805, 2217 South First St., Milwaukee 7, Wisconsin.

Bulletin 628 Vilter Polarflakes

Bulletin 706 Vilter Pakicer

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Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

Advances in Technology

washing with nitrogen gas in a patented continuous counterflow process.

Apparatus comprises a hopper from which granules are fed through a tubular elbow to a vertical pipe. They flow by gravity to a hopper at the bottom of the pipe where they are packaged.

Nitrogen gas is introduced near lower end of pipe through a perforated head that acts as a diffuser. It rises in counterflow to the granules, flushing the air and oxygen from them.

Vertical pipe is composed of alternately constricted and expanded sections of Pyrex glass. The rising gas causes fluidization of the granules in the constricted areas, while a smooth steady flow is maintained through the expanded areas.—U.S. Patent 2,830,911, Apr. 15, 1958.

Fluorescent Pigment In Spoiled Eggs

Pyoverdine was the name suggested by Turfreijer in 1941 for the fluorescent, water-soluble pigment complex elaborated by pseudomonad bacteria during their growth in eggs. It is formed readily during shell-egg spoilage, but much less so in liquid eggs.

The pigment does not contain riboflavin, and color of its aqueous solutions and their fluorescent colors with black light shift with pH.

By daylight, solutions at pH 3.1 are colorless, but fluoresce blue-white; at pH 7.9 they are light yellow-green and fluoresce blue-green, and the green color increases in intensity with rising pH.

Concentration of pyoverdine in spoiled eggs and fluorescent color may also differ with the species of *Pseudomonas* producing it. When frozen whole eggs were analyzed for pyoverdine, recoveries of added pigment were 72-109%, depending on its level in the eggs.—*Applied Microbiology*, 6(4), 241-51, 1958.

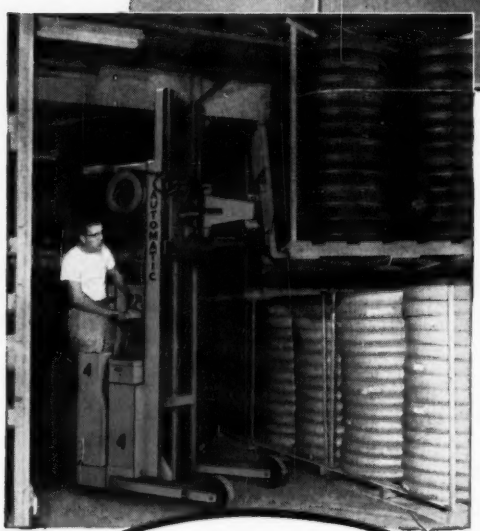
Infrared Spectroscopy Spots Glyceride Fat Adulteration

Speedy detection and identification of adulterants (10% or more) in glyceride fats such as butterfat and olive oil has been found practical by differential spectroscopy.

Procedure comprises dissolving fats

AUTOMATIC

Introduces New "Triple-Action" Transveyor



Swings load right or left 30°

MODEL ESRF

Lifts, Reaches and Swings...Does Fast, Efficient Job in Spaces Too Cramped for Conventional Trucks

The Transveyor's compact low-height reach type mechanism permits greater utilization of existing storage space and the higher stacking of loads...lifts 130 inches from an overall collapsed mast height of 83 inches. It literally reaches around corners...forks swing in unison right or left up to 30°...one control operates the swing and reach type mechanisms simultaneously or individually.

The New Model ESRF can handle various sizes of pallets and skids...work with any existing rack or stacking installation...and eliminate space between loads...because the base arms do not straddle the load.

Load tilt device available as an extra feature. Capacities up to 4000 pounds. Convenient lease and budget terms...just fill out coupon today.

Cost less to own... less to operate

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WORLD'S LARGEST EXCLUSIVE BUILDERS OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS

☐ Please rush me complete specifications on your New "Triple-Action" Transveyor, Model ESRF
☐ Include details on lease and budget purchase plans

Your Name_____ Title_____

Firm Name_____

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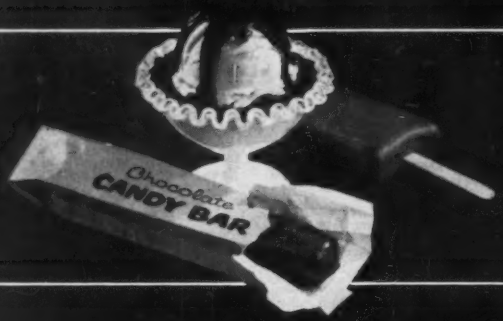
Which milk product is best for you?

Sweet Dairy Whey

A superior dairy ingredient that improves quality and reduces cost



Lactose

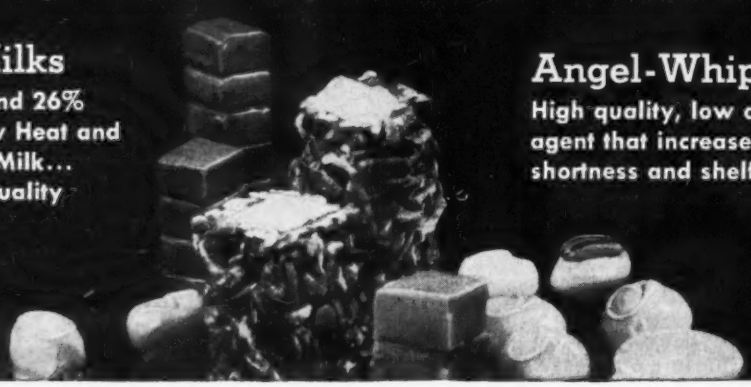
The low-sweetening milk sugar that works wonders in food formulas

Teknikan

The most economical source of that well-known special dairy solids flavor

Powdered Milks

Whole milk (28% and 26% fat), High Heat, Low Heat and Instant Nonfat Dry Milk... all of extra grade quality



Angel-Whip

High quality, low cost whipping agent that increases tenderness, shortness and shelf life

ASK THE MAN FROM WESTERN

THE Man from Western knows the answers to your milk problems.

He is a trained technical specialist, qualified to recommend the milk fraction best suited to your operations. And he offers you the largest variety of high quality milk products available from any single source.

Every Western product...from pure Lactose to powdered whole milk...meets rigid quality control standards. Buy them individually or in prepared blends for particular applications. You can depend on each lot to deliver uniform results.

Let the Man from Western show you how these rich dairy ingredients can improve your products and profits. He'll be happy to furnish you working samples and detailed technical bulletins. Or write: Technical Service, Department 16B. (Be sure to state application.)

Valley Fresh

Western Condensing Company

Appleton, Wisconsin

WORLD-WIDE SUPPLIER OF HIGH-QUALITY MILK DERIVATIVES

(1 sample of pure, a 2nd of suspected one) in carbon tetrachloride and placing them in matched 0.5 mm. cells. When these are exposed to beams of infrared spectrophotometer, any slight difference in spectra will be evident as deviations. If both fats are pure, a straight line will be obtained.—*Perkin-Elmer Instrument News*, 8-9, Winter, 1958.

Effect of Antioxidants On Some Food Products

Study has been made of the use of higher gallic acid esters, BHA, and BHT as antioxidants in animal fats, vegetable oils, margarine, and bakery products.

The gallates proved highly effective in animal fats, but achieved scarcely any effect in vegetable oils and margarine. Tetradecyl and dodecyl gallate gave good results with whole-milk powder, but with bakery products the results varied considerably. In some cases dodecyl gallate exercised a favorable influence on the flavor.

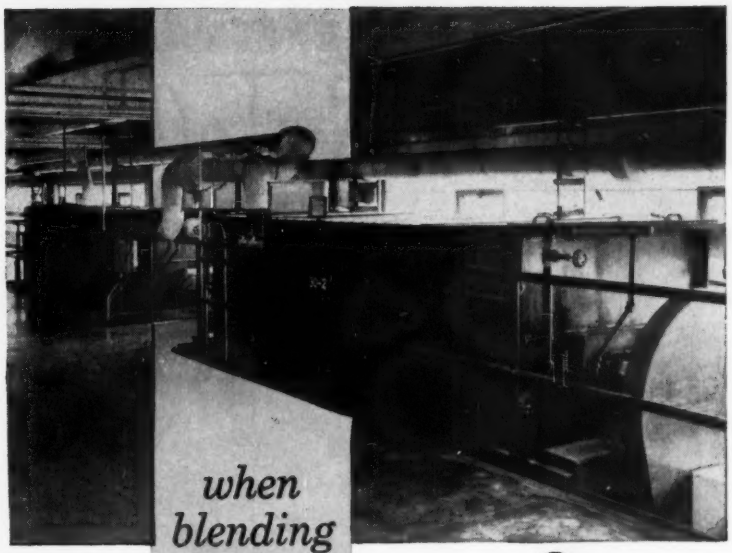
In tests on peroxide formation in lard at 100 C., curves for dodecyl gallate, BHT, and a mixture of the two are almost identical, but the best result was given by the mixture. BHA was of lesser value. In storage tests on lard at room temperature, fat treated with propylgallate showed the highest quality. BHA and BHT were less satisfactory.

Experience with antioxidants in refined non-hydrogenated vegetable oils has been almost invariably disappointing. In margarine some antioxidants had a promising effect on peroxide formation, but only a slight effect on flavor. In a bakery product such as Dutch shortbread, BHT affords good protection against flavor deterioration.—*J. Amer. Oil Chem. Soc.*, 448-55, Sept. 1958.

Closed Refining System Improves Oil Quality

Latest advance in continuous refining of oils is a completely closed system using hermetically sealed separators. In it there is no contact of oil with air until the refined and dried product leaves the plant. Phosphoric acid is used to neutralize excess alkali.

Such a plant is easy to run, takes little space, and refining losses are low. It can be used for all kinds of



DAY JUMBO MIXERS . . . meet every requirement for maintaining a thorough blend of chocolate products under sanitary conditions at The Nestlé Company, Inc., Fulton, N. Y. For instance: seals may be furnished of sanitary construction requiring no packing, and of such simple design as to permit thorough cleaning in a matter of minutes between batches—(no more black specks working into product from stuffing boxes).

Outboard bearings on all models allow plenty of room for normal cleaning and maintenance. Special agitators available for blending high shortening content products. Heating or cooling jackets, dust covers and many other optional features available. For complete information write for Bulletin 800.

in mixing equipment FOUNDED 1887 DAY *means longer life span*

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Quality equipment for baking, paint and varnish, printing ink, chemical, rubber, pharmaceutical, cosmetics, paper and pulp, explosives, food, ceramics, candy, soap, sugar and milk products.

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NOTHING STICKS TO Teflon*

FOR FOOD PROCESSING . . . AN ECONOMICAL *time saver*

Prevents delays. As a lining for hoppers, mixers, chutes, Cementable Teflon, with its low coefficient of friction, moves dry powders and sticky batches swiftly, freely. Eliminates material build-up and the need for vibrators.

Eliminates conveyor jamming. Teflon's slippery surface on conveyor guide rails slides packages on their way without jam-up. Preserves shelf appeal of boxes, labels, bags.

Reduces clean-up time. Just wipe off Teflon work surfaces and they are ready for re-use. No lost time in soaking or scraping hardened, gummy food particles.

Cementable Teflon, as made by Garlock's Plastics Division, the United States Gasket Co., is non-contaminating, odorless, colorless, tasteless, non-absorbent. It can be bonded to metal, wood, glass, concrete, other surfaces. Available in continuous tapes .005″ through .096″, through 24″ wide, and in sheet through 48″ x 48″.

See how you can put this time-saver to work. Contact one of the Garlock Packing Company's 30 sales offices and warehouses in the U. S. and Canada, or write for Catalog AD158.

United States Gasket

THE GARLOCK PACKING COMPANY,
Palmyra, N. Y.

*DuPont Trademark for T.F.E.-fluorocarbon resin

Plastics Division of GARLOCK

Advances in Technology

oil except castor, and can be easily converted from one kind to another. Phosphatides are completely removed. This together with elimination of oxidation improves quality of refined oil.—*Chem. & Ind.*, 1152-60, Sept. 6, 1958.

Citric Acid In Media Ups Diacetyl Yield

Diacetyl is considered a desirable product of fermentation in such food products as cream and butter starters, but undesirable in fruit juices and beer.

It is produced by a number of lactic bacteria which demand different substrates, pH and temperatures. Homofermentative species produce it more rapidly than heterofermentative types. Citric acid in the medium increases the yield of diacetyl, though several species produce diacetyl in its absence.

Less diacetyl is produced when growth occurs under optimal conditions. In orange juice media *L. plantarum* B246 produced 6.18 ppm. at pH 5.5; *L. brevis*, 9.00 ppm. *Pediococcus cereivisiae*, which will produce diacetyl in beer, gave up to 4.00 ppm. in media containing 0.137% citric acid.—*Applied Microbiology* 6(5), 319-22, 1958.

Thawing Whole Carcasses Prevents Excessive Drip

As long as whole lamb carcasses are frozen and thawed, quick freezing prior to onset of *rigor mortis* is not likely to present problems of thaw rigor. If broken down to retail cuts before thawing, however, shortening of muscle and excessive drip may be encountered.

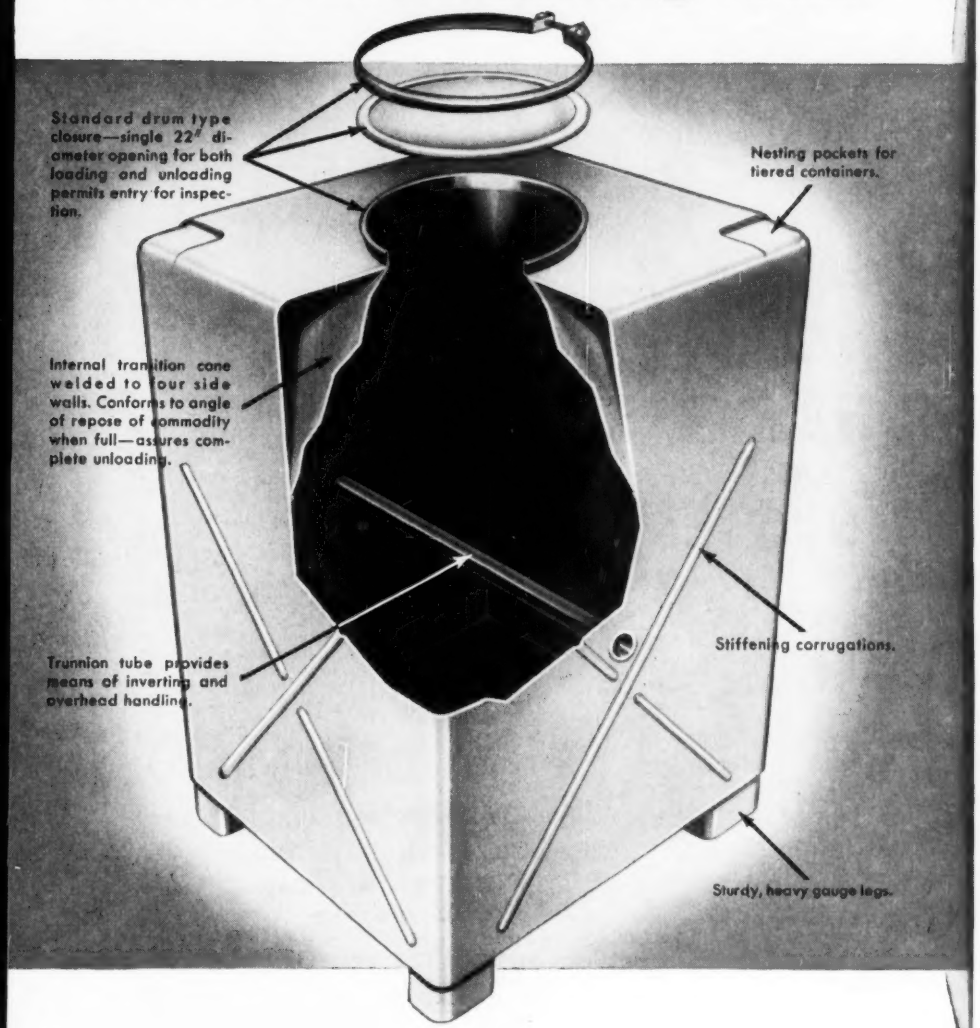
This was indicated by experiments in which conditions now prevailing in some New Zealand packing plants were simulated. Here, lamb carcasses are subjected to temperatures as low as −4F. and air velocities up to 500 fps. within a few hours after slaughter. Superficial tissue begins to freeze within 3-4 hr., and deep muscle within 8-10 hr.

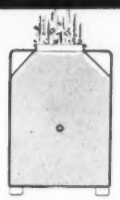
The experiments showed that *rigor mortis* in lamb muscle is similar to that in beef carcasses—when frozen whole, attachment of muscle to skeleton prevents shortening and shrinkage on thawing which, in turn, reduces or prevents drip. Slow thawing was also found beneficial.—*J. Sc. Food & Agr.*, 9(7), 417-24, 1958.

For more data, circle 311 on Reader Service Card

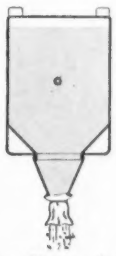
For more data, circle 312 on Reader Service Card

New Powell Invert-a-bin slashes bulk handling costs

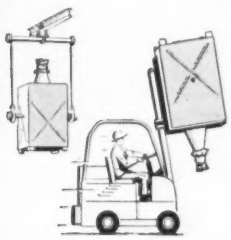

Standard drum type closure—single 22" diameter opening for both loading and unloading permits entry for inspection.
Nesting pockets for tiered containers.
Internal transition cone welded to four side walls. Conforms to angle of repose of commodity when full—assures complete unloading.
Stiffening corrugations.
Trunnion tube provides means of inverting and overhead handling.
Sturdy, heavy gauge legs.



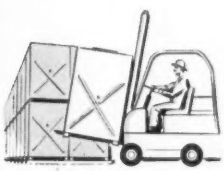
Fills Fast—22" opening permits fast filling of even powdered materials. Internal cone conforms to angle of repose.



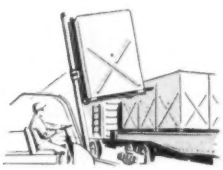
Empties Clean—Internal cone funnels all materials out of bin. No residue remaining.



Used Anywhere—Standard handling equipment—no fancy unloading devices needed at every use area.



Stores Outdoors—Weatherproof, turns yard area into warehouse. Stacks 2 high.



Cuts Shipping Costs—low cost flat-bed equipment considered part of special rail car with "freight free" advantages.

For bulk handling dry granular or powdered materials—sugar—flour—plastics—chemicals—cement—etc.—in plant or between plants, the new patented Powell Invert-A-Bin made of steel or aluminum is the simplest, most versatile container ever developed.

Easily filled, easily inverted, quickly emptied, the Invert-A-Bin can be used anywhere without special devices at each use point. It stores safely outside, lets you take advantage of many transportation economies. Invert-A-Bins eliminate the use of disposable packages and bring you all the advantages of a bulk handling system without the costly investment. Get all the facts—write today for your copy of the Invert-A-Bin, Semi-bulk handling brochure.

POWELL PRESSED STEEL Since 1920 HUBBARD, OHIO

THE POWELL PRESSED STEEL COMPANY

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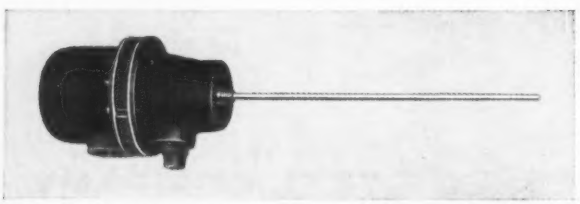
Better products, more profit...

AUTOMATICALLY

with a HONEYWELL MOISTURE CONTROL SYSTEM

ROLLER TYPE SENSING ELEMENT is used to measure the moisture content of sheet materials. Segmented rollers are available for moisture profiles. When properly insulated, idler rollers on a machine can be used for measuring the average moisture content of sheet materials.



PROBE TYPE SENSING ELEMENT is used to measure the moisture content of granular materials.

THE HONEYWELL *MOIST-O-GRAPH* HAS BEEN TESTED AND PROVED WITH THESE MATERIALS:

POTATO SHEET
COTTONSEED
TOBACCO SHEET
FLOUR
OAT BITS
ALFALFA
OAT FLAKES
CASTOR BEAN
PEANUT MEAL
DRIED BEET BULB
BARLEY AND OATS GRASS
LIMA BEAN VINES
LINSEED MEAL
POTATO STARCH
PEARL STARCH

HONEYWELL *MOIST-O-GRAPH* measures moisture content from approximately 5% to 30% by resistance measurement, with a range of 0-100,000 megohms.

Automation makes any process pay extra dividends in productivity, product improvement and profit. One of the many ways Honeywell can bring you the advantages of automation is through precise, automatic control of moisture in granular and sheet materials.

The Honeywell *Moist-O-Graph* system gives you positive quality control, and lets you maintain a profitable moisture balance in your products. It gives you a continuous, permanent record of moisture content. It leads the way to tangible savings in your drying operations, and lets you use your manpower more productively. Presently installed *Moist-O-Graph* systems have paid for themselves in six months.

Let Honeywell survey your process for best possible application of the *Moist-O-Graph* system. Get complete details from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

H HONEYWELL *First in Control*

Best way to Increase Flavor, Texture and Value

Food processors have long relied upon the quality ingredients distributed to the food industry by Corn Products Sales Company: Cerelose dextrose sugar; Buffalo, Hudson River and Snowflake starches; Rex and Globe corn syrups. These fine products bolster the flavor, texture and color of fine foods—factors that enhance food value and keep buyers reaching for your brand.

The sugars, syrups and starches available from Corn Products Sales Company do more than increase these desirable food qualities: they save on production costs as well. These *natural* products are easy to handle, lead to more efficient, economical processing. Their carefully controlled quality, uniform from day-to-day, means your formulations can be consistent and standardized.

The experience amassed by our technical representatives in incorporating Corn Products sugars, syrups and starches in virtually every type of fine food product sold today, is always at your service. For full information on how these quality-enhancing ingredients can be adapted to your processing, call our nearest sales office or write direct.

CORN PRODUCTS SALES COMPANY • 17 Battery Place, New York 4, New York

Fine Products for the Food Industry: CERELOSE® dextrose sugar • BUFFALO®, HUDSON RIVER® and SNOWFLAKE® starches • REX® and GLOBE® corn syrups

←For more data, circle 313 on Reader Service Card

For more data, circle 314 on Reader Service Card

More "Oomph" in "57" Marketing? . . . In past decade, consolidated sales of H. J. Heinz Co. have grown from $175 million to $294 million.

Firm's new management setup stresses that growth—plus a push to up Heinz' competitive marketing strength.

So says H. J. Heinz II, 50, who continues as chief executive officer in new-made post of board chairman.

He cites backgrounds of Frank Armour, Jr., now president and chief operating officer, and B. Dent Graham, now exec. v.-p. for U. S. domestic business.

Frank Armour, Jr.

Prior to becoming exec. v.-p. of world operations, in 1957, Mr. Armour was sales v.-p. And Mr. Graham has been marketing v.-p.

George D. Bryson

Peripatetic V.-P. . . . Growth abroad has been targeted by General Foods, Inc.

Preliminary move is assignment shuffle of two v.-p.'s. Tapped for travel is George D. Bryson in new-made post of v.-p. for planning international development. He will study "new marketing opportunities for GF throughout the world."

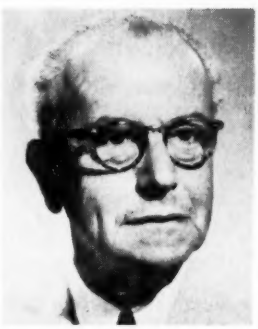
Mr. Bryson joined GF in '53 as v.-p. to set up an international division. The firm has since expanded prior foreign operations, and launched 6 new ones. Report is, "sales and profits abroad have increased."

Succeeding Mr. Bryson in charge of the international div. is V.-P. James P. Delafield. He has been in charge of sales and customer services.

Easier Trading . . . A lift to customers hampered by tariffs, currency restrictions, import licenses, and the like, is significant aim of recent merger of van Ameringen-Haebler, Inc., N.Y.C., and Polak & Schwarz N.V., Zaandam, Holland.

Combination gives parent company, International Flavors & Fragrances, Inc., N.Y.C., manufacturing subsidiaries in 15 countries.

Board Chairman A. L. van Ameringen and President Charles P. Walker previously held same posts in U.S. firm. Exec. V.-P. C. C. Brummer was a managing director of Polak & Schwarz.



A. L. van Ameringen

Van Ameringen-Haebler has recently carried out $1.5 million expansion of its Union Beach, N.J. operations.

Candy Drive . . . New president of National Confectioners Assn., Douglas S. Steinberg, 40, receives a ship-shape organization from outgoing Philip P. Gott, 69.

Since he accepted post in '41 Mr. Gott has presided over a steady growth. Current membership of over 500 covers approximately 85% of U. S.-made candy.

But, says energetic Mr. Steinberg, NCA will go after still more members, and will expand its merchandising and public relations program to up sales of entire candy field.

Before his appointment in '58 as NCA asst. prexy, Mr. Steinberg was pub. rel. director of National Lumber Mfrs. Assn.

Douglas S. Steinberg

Mr. Gott has become v.-p. of August Burghard, Inc., advertising agency, Fort Lauderdale, Fla.

W. Gardner Barker has become president and chief executive officer of Thomas J. Lipton, Inc.

L. G. Blumenschine, head of Best Foods, Inc., prior to its merger with Corn Products Refining Co., is retiring as president of Corn Products' Best Foods Div., but will continue as a director, member of the executive committee, and also as a consultant.

Richard O. A. Peter has been elected chairman of executive committee and chief executive officer of Bunte Bros. Chase Candy Co., Chicago.

Dr. Cliff D. Carpenter is resigning as v.-p. of Institute of American Poultry Industries.

George L. Clements of Jewel Tea Co., Inc., will chairman food group supporting main U. S. exhibit at 27th International Trade Fair in Barcelona, Spain, next June. Typical "Supermarket USA" is to be supplied by over 600 food processors and equipment manufacturers.

Dr. William V. Cruess, professor of food technology & chemist at U. of Calif., is recipient of 6th annual 49'er service award at National Canners Convention, Chicago.

Gerald S. Kennedy, who has been exec. v.-p. since Sept. '58 and v.-p. since '43, is General Mills' new board chairman. He joined parent Washburn Crosby Co. in 1914 as an office boy.

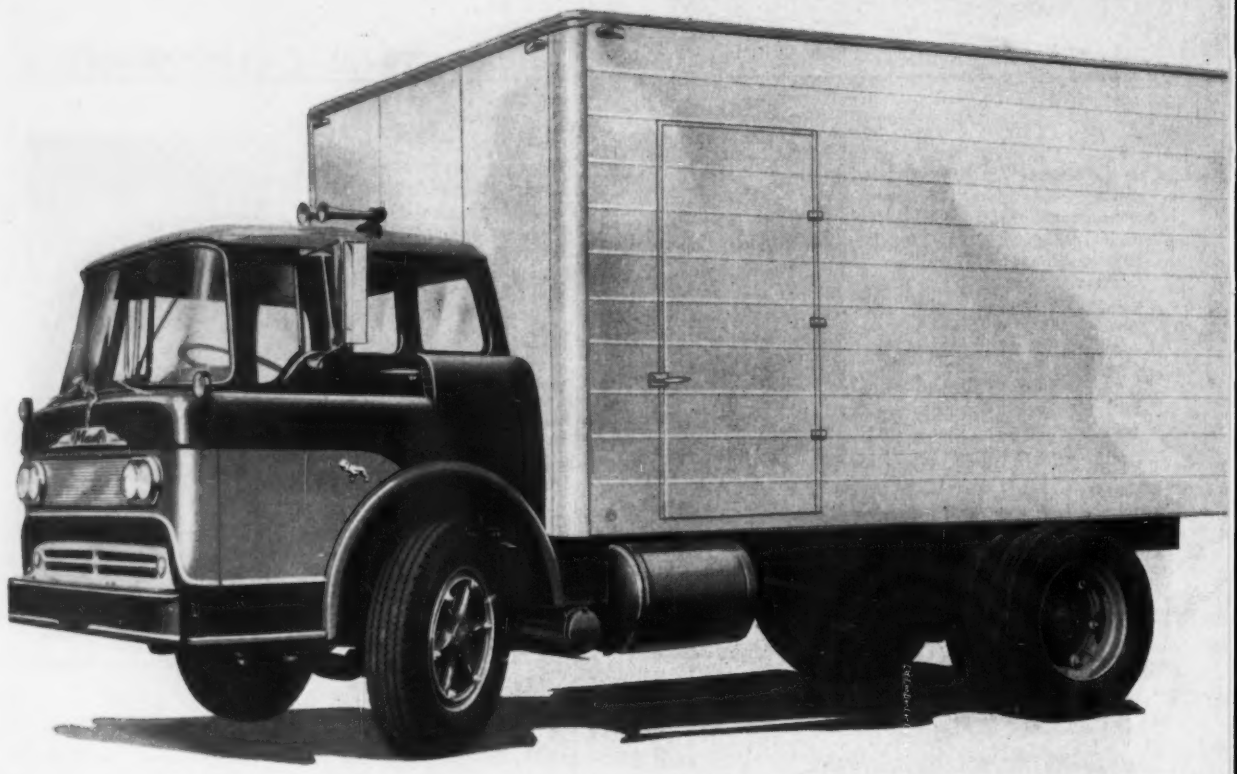
Dr. Roy E. Morse, chairman of food science at Rutgers U., will serve as '59 food industry director of Instrument Society of America.

Dr. Bernard L. Oser, head of Food & Drug Research Laboratories, Inc., New York City, will give a spring course of lectures to graduate students at Columbia U. on food regulation and safety evaluation.

C. L. Rumberger, chairman of the scientific research committee of National Canners Assn. and H. J. Heinz Co. v.-p., will serve on USDA's food distribution research and marketing advisory committee.

Dr. Foster Dee Snell, president of Foster D. Snell, Inc., New York City, has received an honorary membership from American Institute of Chemists.

John T. Walsh, asst. director of American Dry Milk Institute, Inc., assumes post of director upon retirement of Dr. B. W. Fairbanks.



ONLY
NEW MACK *MODEL N* COE's

give you all these profit-boosting features

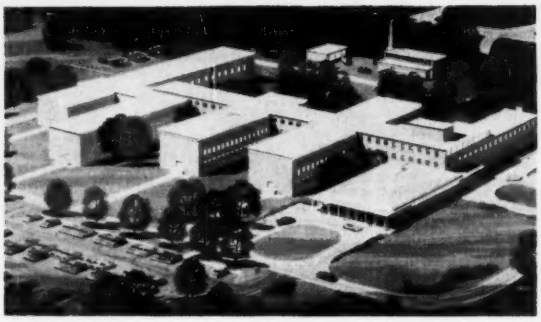
- Choice of Mack engines—gasoline, diesel or turbo-charged diesel—from 150 to 205 h.p.
- Tilt-cab action for full engine accessibility
- Truck and tractor models
- Low step-height for easy entry-exit . . . flat floor (on 40 series) for swift exits from either door
- "Executive suite" cab engineered for comfort, fume-free ventilation and smooth-handling controls
- Panoramic, wrap-around 3606-square inch windshield
- Set-back front axle for ⅓:⅔ weight distribution on trucks and maximum front-axle loading on tractors
- Advanced Mack steering systems for utmost maneuverability
- Choice of Mack transmissions (5 to 15 speeds), brakes, frames and suspensions
- 4- or 6-wheel models with option of famous Mack Balanced Bogie

These compact cost-busters give you every feature needed for economy, bonus payloads, and fast action in and out of congested areas. That's why Mack Model N COE trucks and tractors have won immediate acceptance by dollar-conscious operators throughout the nation.

For the names of firms that are already cashing in on the advanced profit-power of Mack Model N's . . . or for a briefing on the Model N that will do as much for you—contact your Mack branch or distributor today! Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK *first name for* **TRUCKS**

Industry



General Mills will emphasize basic research at its new multi-million dollar Center in Golden Valley, Minn. Construction, to begin in Spring, is scheduled for completion about 1964-65, with main stem ready for occupancy in mid-'60. Campus-type development will be located on 112-acre site.

Chocolate Mfrs. Assn. of U.S.A. is new name of **Assn. of Cocoa & Chocolate Mfrs. of U. S.**

Consolidated Foods Corp. has bought Lawson Milk Co., Cuyahoga Falls, Ohio, for $10 million cash.

International Assn. of Ice Cream Mfrs.'s new president is I. N. Hagan, head of I. N. Hagan Ice Cream Co., Uniontown, Pa. New v.-p. is **E. Gordon Silverwood,** head of Silverwood Dairies, Ltd., London, Ontario.

H. W. Lay & Co., Inc., Chamblee, Ga., has bought **Halter's Pretzels, Inc.,** Canton Ohio. Purchase of pretzel company, which has current sales volume of approx. $2 million, adds about 10% to Lay's total net sales.

Pabst Brewing Co. will close Milwaukee brewery of its **Blatz** subsidiary and carry out $1,250,000 expansion of Pabst facilities in that city to add production of Blatz beer.

Associated Industries

Continental Can Co. will locate bleached sulfate paperboard and paper mill on 2,600-acre site near Augusta, Ga. Cost has been estimated at nearly $50 million. Company's decision to produce its own paperboard for cartons, plates, cups, and containers for first time points up recent capital investment ferment in paper field. Projects of other paper companies include: **International Paper Co.'s** plans to build a milk container plant at Versailles, Ky., with capacity of 35 million/mo.; **St. Regis Paper Co.'s** foreign move to acquire 50% interest in three Union of South Africa container manufacturing firms there; **Crown Zellerbach Corp.'s** anticipated new mill at Ventura, Calif., plus further modernization and expansion; **Union Bag-Camp Paper Corp.'s** 3-yr. $80 million expansion program which still has $17 million to go in '59; **Diamond Gardner Corp.'s** just started up new $25 million center at Red Bluff, Calif.

Isker & Adajian is new Chicago agency specializing in food and food equipment advertising, formed to succeed Pilgrim Advertising, Inc.

H. Kohnstamm & Co.'s dedication ceremonies for its new plant at Kearny, N. J., featured Governor Robert Meyner as speaker.

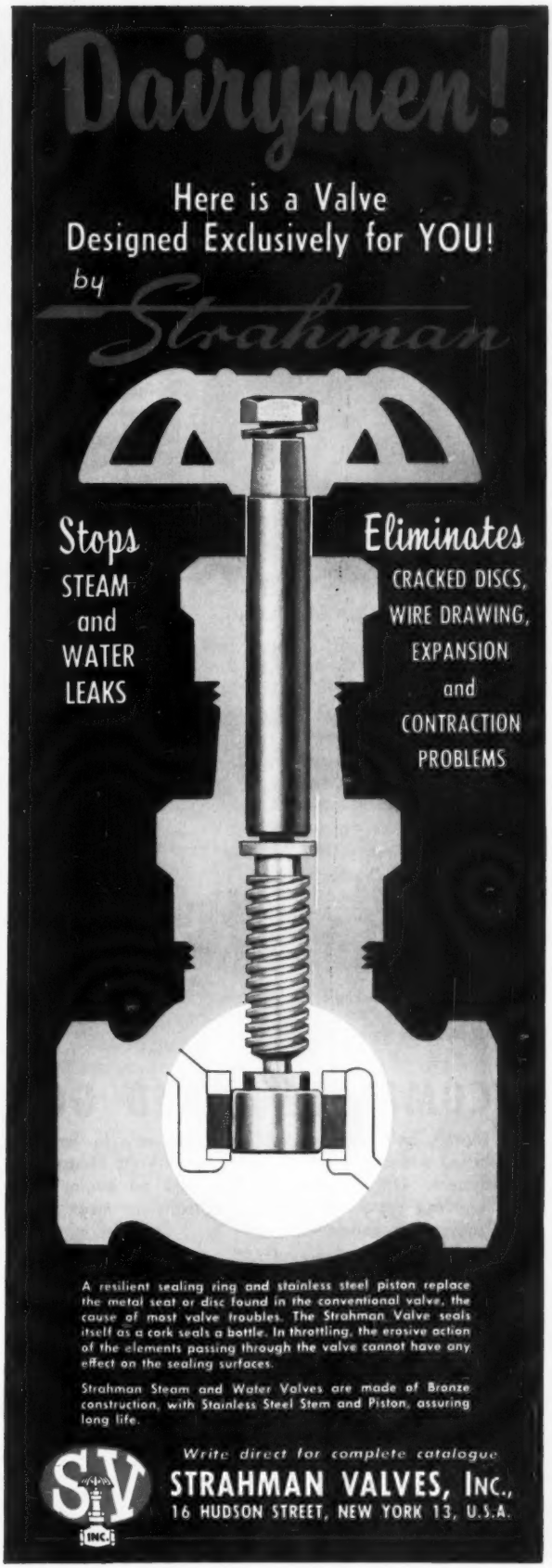
Laurens Glass Works, Inc., Laurens, S. C., will build multi-million dollar plant at Henderson, N. C.

Material Handling Institute, Inc.'s '59 prexy is Eugene Caldwell, gen. mgr. of Baker Industrial Trucks, division of Otis Elevator Co.

Deaths

Lewis M. Dugger, 62, v.-p. of market research of Coca-Cola Co., Atlanta.

Edward J. Noble, 76, board chairman of Beech-Nut Life Savers, Inc., as well as chairman of finance committee of America Broadcasting-Paramount Theaters, Inc.


Dairymen!
Here is a Valve
Designed Exclusively for YOU!
by Strahman
Stops
STEAM
and
WATER
LEAKS
Eliminates
CRACKED DISCS,
WIRE DRAWING,
EXPANSION
and
CONTRACTION
PROBLEMS
A resilient sealing ring and stainless steel piston replace the metal seat or disc found in the conventional valve, the cause of most valve troubles. The Strahman Valve seals itself as a cork seals a bottle. In throttling, the erosive action of the elements passing through the valve cannot have any effect on the sealing surfaces.
Strahman Steam and Water Valves are made of Bronze construction, with Stainless Steel Stem and Piston, assuring long life.
Write direct for complete catalogue
STRAHMAN VALVES, INC.,
16 HUDSON STREET, NEW YORK 13, U.S.A.

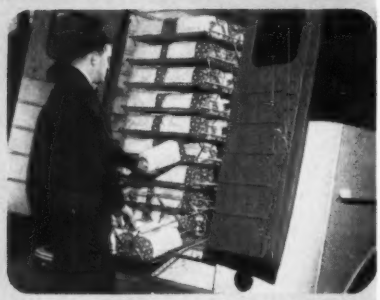
Modernize your method of Handling Baked Goods . . .

Baked goods are loaded into Nestaway Racks from top or end at wrapping machine.

Racks are moved on caster bases to order make-up. Stacks of racks are broken down; reassembled into orders.

Filled Racks are loaded on trucks for delivery to stores and distribution points. Racks roll easy; fit snugly in trucks.

Filled Racks are left in store for customer consumption. Products attractively displayed in racks and are easily accessible.



On door-to-door routes, salesman loads carrier right from filled racks. When empty, racks are nested by salesman.

Nestaway racks are wheeled into freezer from wrapper. Open construction permits rapid freezing; defrosting.

. . . from Wrapper to Consumer

NESTAWAY is the only

Nestaway Racks nest almost 100%. Nested racks can be stored in out-of-way places; saving up to 78% floor space.

COMPLETE BAKED GOODS HANDLING SYSTEM!

There's only one modern, efficient way to handle bread and baked goods and that's with the Nestaway System. Only Nestaway offers you an engineered handling system designed specifically to meet your bakery's requirements.

Nestaway with its wire shipping racks, rack dividers—which double rack capacity—and castered bases enables you to load bread and baked goods at the wrapper and move them all the way to the consumer without any rehandling of your products. No other handling system protects baked goods like Nestaway. Your products reach the customer just as they left the wrapper. And, with the Nestaway System you can merchandise your products right in the store without transferring them to display stands.

In freezing operations, order make-up, door-to-door deliveries and in-store use, Nestaway provides a flow of motion you'll find with no other system. Nothing saves space like Nestaway. You can store 56 empty racks in the same space 12 full ones require. Think of it! You save up to 78% in valuable storage space.

Whether your operation is retail, wholesale or both, the Nestaway System will save you time, space and money and make your operation more efficient than it's ever been.

Write for **FREE** Brochure

"Engineered Material Handling Systems"

NESTAWAY INC.

2108 PAYNE AVE., CLEVELAND 14, OHIO

How

GOT A FOOD PROCESSING PROBLEM

Sunkist technical advisers...over 400 different citrus products for industry...can help you solve it!

SUNKIST KNOW-HOW produces the finest citrus products to be had. That same know-how—the backlog of more than 60 years experience—and those citrus products—over 400 of them—can help solve your food processing problem.

Every course on the American menu has profited from Sunkist research or Exchange products. We've made a good condensed soup glorious by adding a few ounces of Exchange Lemon Juice to *100 gallons* of it. We have stopped pies from "bleeding" by using Exchange Low Methoxyl Pectin in the filling.

And between soup and dessert, we've devised enough manufacturing processes for the benefit of the American food processor to get Sunkist 118 separate U.S. patents!

Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research department. Write—or, if it's urgent, telephone—and a Sunkist man will call on you.

Sunkist Growers

Exchange

PRODUCTS SALES DEPARTMENT • ONTARIO, CALIF.

EXCHANGE BRAND CITRUS PRODUCTS widely used by leading food processors include: *Lemon Juice...Orange Juice...Orange Oil... Lemon Oil...Frozen Orange Puree...Frozen Lemon Puree... Preserver's Pectin...Low Methoxyl Pectin.*

For more data, circle 318 on Reader Service Card

How

RYKON

GREASE

has performed in seven tough applications

In just two years since introduction, **RYKON** Grease has stepped in to deliver lubrication in hundreds of applications where other greases have failed

1

2

3

4

In the process industries where higher speeds, loads, temperatures and pressures are being put on bearings as a means of increasing productivity of equipment, a new type of grease has been needed. RYKON is that grease. Here are just seven examples of how RYKON Grease has performed in tough spots:

Industry	Equipment	Type of Bearings	Conditions	Remarks
Packing Company	can closers	various	high temperature, heavy load, wet	Outperforms previously used greases.
Brewery	washers, conveyors	various	high temperature, wet	Lasts longer and does a far better job on all applications.
Packing Company	canning machines	plain and anti-friction	wet	Very satisfactory.
Chemical Laboratory	washers and degreasers	anti-friction	wet	Better than any grease tested in degreasing solvent.
Automotive Parts Mfr.	reciprocating pump bearings	plain	wet	Pumping chemicals. O.K. after one month. Previous grease caused about one bearing failure per week.
Paper Mfr.	liquid sulfur pump	anti-friction	high temperature, wet	Has extended life of bearings.
Paper Carton Mfr.	all grease-lubricated parts	various	high temperature, heavy load, wet	Replaced eight different greases. Stays in better.

The reason RYKON Grease can perform under conditions that cause other greases to fail is this: RYKON Grease has a unique non-soap, organic thickener. This thickener holds the oil between its fibers better than any other gelling agent. The thickener is able to withstand extremely high as well as low temperatures. It resists chemical action and remains stable under conditions of severe working and water washing. RYKON Grease has exceptional anti-rust properties.

RYKON Grease's unique properties make it truly multi-purpose. This leads to many worthwhile economies. With one grease to do possibly every grease lubrication job in a plant, there's no chance for application mistakes. Inventory and handling of many single-purpose greases is reduced or eliminated and maintenance training and supervisory follow-up is greatly reduced.

More facts about RYKON Grease are yours for the asking. Call the lubrication specialist in your nearby Standard Oil office in any of the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.**

You expect more from **STANDARD** *and you get it!*

Oven test shows high temperature performance of RYKON Grease. **1.** Metal panel coated with RYKON and placed in oven at 350° F. **2.** Same panel after five days. RYKON is still soft and ready to lubricate. **3.** Another high-melt grease ready for same test. **4.** Same panel after oven test. Grease has failed completely.

For more data, circle 319 on Reader Service Card

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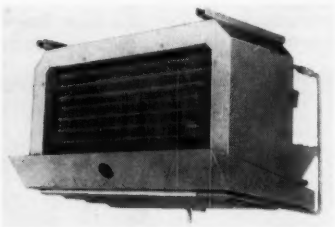
NEW EQUIPMENT & SUPPLIES



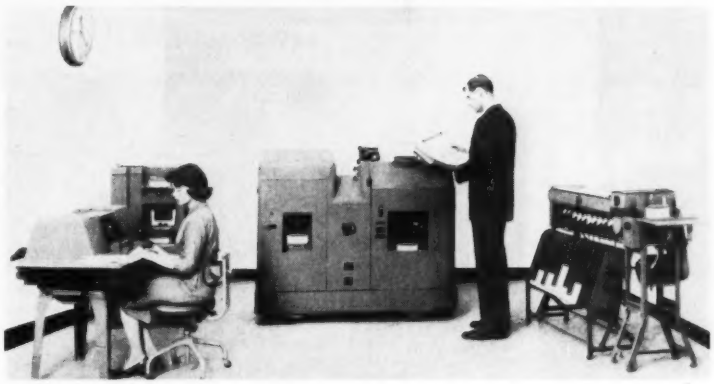
Versatile Product Coolers

Particularly adaptable for use in sharp freezing, ice cream hardening, and cold warehousing is a new series of Krack low-temperature, hot gas defrost product coolers.

Available in multiple and single-fan ceiling models, they maintain not only low temperatures but also higher temperatures to 34F. with minimum humidity variation.

Air capacity of multiples ranges to 10,725 cfm., of singles to 2,490 cfm. Freon, flooded ammonia, re-circulated ammonia, or direct expansion ammonia may be specified.—*Refrigeration Appliances, Inc., 901 W. Lake St., Chicago.*

Circle 16 on Reader Service Card



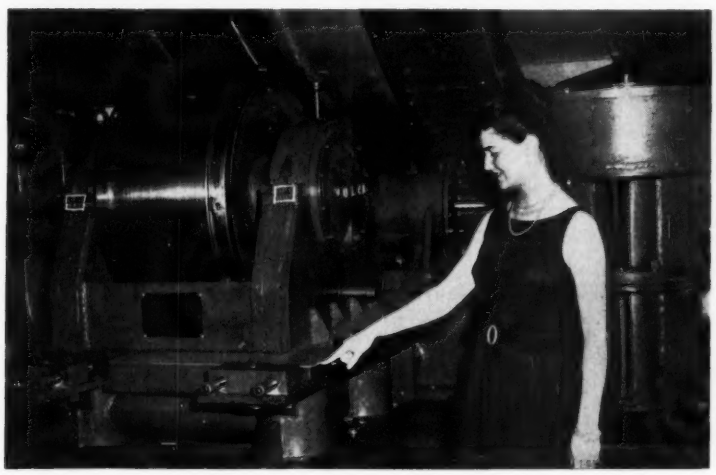
4-Unit System Gives Small Firms Top Data Performance

Advantages of speedy machine-processing of production and sales data, inventories, payrolls, and general accounts are now afforded branch plants and average-size companies through use of this new low-cost punched-card system.

Maker calls it a major advance boosting small firms to big-plant data performance.

Setup comprises an alphabetical punch, sorter, alphabetical tabulator and summary punch, and reproducing punch. As supplied, system operates at 60 cards a minute, can be adjusted to faster rate if desired.—*Remington Rand Univac Div. of Sperry Rand Corp., 315 Fourth Ave., New York City.*

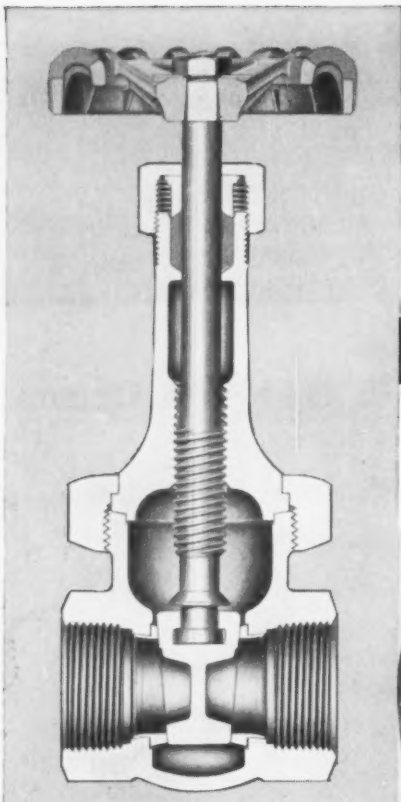
Circle 17 on Reader Service Card



New Rotary Dryer Drive Will Reduce Maintenance

Innovations in drive and support gear for huge rotary dryers or kilns have been engineered to cut installation time, maintenance, and power consumption.

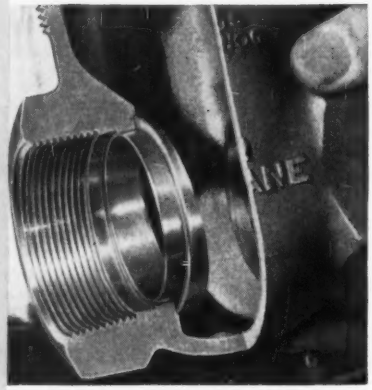
Trunion rollers (left in photo) upon which dryer shell turns not only have antifricton bearings, but are self-aligning via a lubricated swivel plate for minimum trouble, maximum wear. These supporting rollers take no thrust, as in conventional design. Instead a separate thrust roller, mounted between bearings on a vertical axis, turns against a ring on shell to take end load (top right). Bearings are pressure lubricated, and



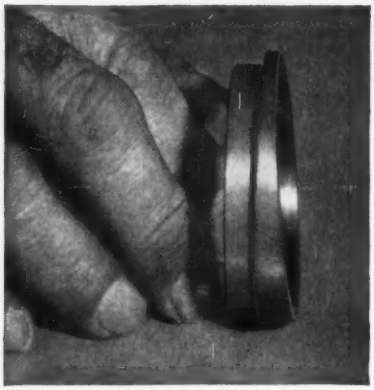
COMPLETELY NEW—loaded with improved service features inside and out. Two complete lines: rising stem pattern (No. 634E—cross section shown), non-rising stem (No. 636E)—both in sizes ¼ to 3 in. incl., with screwed ends. See below for literature.

NEW CYLINDRICAL BODY SHAPE—a proven design on high-pressure steel valves—increases strength without added bulk, distributes pressure load uniformly, resists distortion and leakage at seats.

NEW, STRONGER HEX ENDS, better integrated with body, eliminate sharp contours, give entire valve more rigidity under line strains. Wider hex faces allow firmer wrench grip for easier installation. Marring less likely.



NEW, EXPANDED-TYPE BODY RINGS insure long, tight-seating service life. They're rolled in, can't work loose. Shoulder at bottom of end threads restrains excessive entry of pipe against possible seat damage.



NEW EXELLOY, 12% chromium steel body rings give a hard bearing surface, highly resistant to wear, indentation, scoring and foreign matter damage. Easily replaced bronze disc takes the brunt of normal wear.

New design for tough service...easy maintenance

300-Pound Wedge Disc Bronze Gate Valves

Rising Stem and Non-Rising Stem Patterns

A new body shape that distributes greater strength uniformly against internal stresses and external strains . . . better integrated hex ends, huskier and wider, that add to body rigidity and give a firmer wrench grip . . . new rolled-in, high wear-resisting alloy body rings that don't work loose . . . easily renewed wedge disc—these are typical important features of new Crane bronze gate valves.

On your toughest services, these valves assure ultimate durability . . . new ease of application . . . low-cost repairability. And they're priced no higher than ordinary 300-pound integral seat bronze valves.

Easy to Repair—The Disc Takes the Wear

After long, hard service the hard Exelloy (12% chromium) body rings show no appreciable wear. Normal seating wear is taken by the bronze disc. When needed, a new disc, easily slipped onto stem, provides a practically new, tight-seating valve.

Circular Gives The Facts

For complete technical data on both rising stem and non-rising stem patterns . . . size listing, etc., get Circular AD-2340 from your Crane Representative, or by writing to address below.

CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill.—Branches and Wholesalers Serving All Areas

frictional hp. load is only $\frac{1}{10}$th conventional.

Ring which encompasses shell and turns on supporting rollers is an alloy steel forging mounted on integrally machined sub-assembly of shell to insure concentricity.

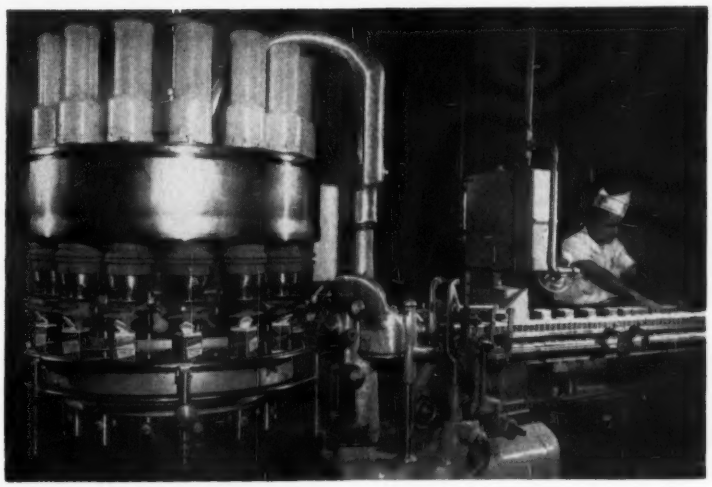
Gear train is mounted on same pier that carries associated trunion rollers and thrust roller. All drive units are on a common bed, put together in maker's shop, then doweled for quick assembly in user's plant. Unit is powered through variable-speed drive, gear box, and flexible couplings.

Cost is 3 to 5% higher than for conventional design, but quicker installation is said to offset this. Long operation without bearing misalignment or other maintenance problems is anticipated.—*Vulcan Iron Works, Wilkes-Barre, Pa.*

Circle 18 on Reader Service Card

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign your name and address and mail. For more convenience, too, these items are listed and keyed in the Reader Service Section.



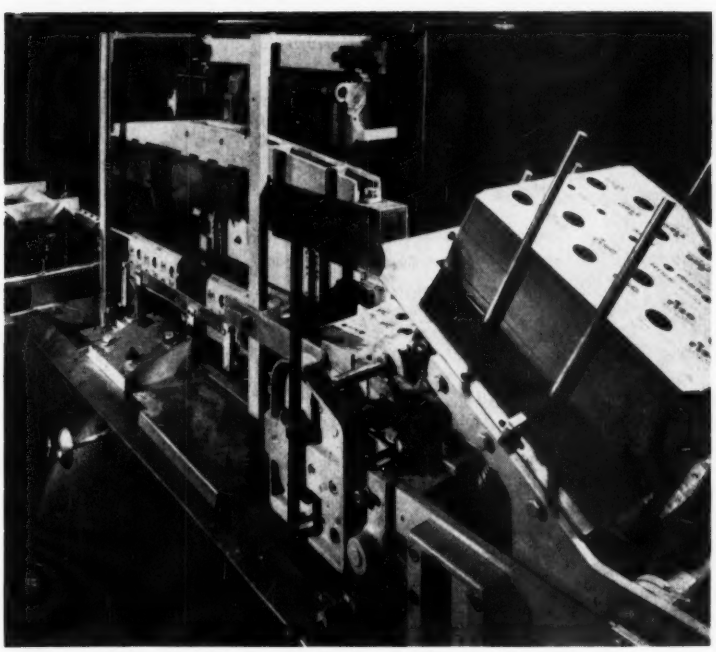
Fast Milk Filler Offers Rapid Carton-Size Changeover

This versatile unit may be quickly changed over to handle any of maker's paper milk cartons without operator touching any milk-contact parts.

Known as Model 300-15A, the 15-valve unit fills pints, half-pints, and one-third-quarts at 120 per min., quarts at 90 per min. New valve design permits use of nylon and rubber along with stainless steel, and elimination of outside operating rods gives a streamlined appearance. All filling-cycle components are enclosed.

In operation, milk flows from a stainless-steel tank through rubber bellows and into bottom-actuated measuring sleeves. Threaded displacement plungers control amount of milk entering sleeves, and flow is easily adjusted by turning nylon casings enclosing the plungers. Casings have notches around their base indicating turns for precise fill.

In addition, unit's operation eliminates dripping or clinging from valve nozzles, reduces foaming during filling, enables leakproof closures, and provides for flexible in-feed and discharge of containers.—*American Can Co., 100 Park Ave., New York City.* Circle 19 on Reader Service Card



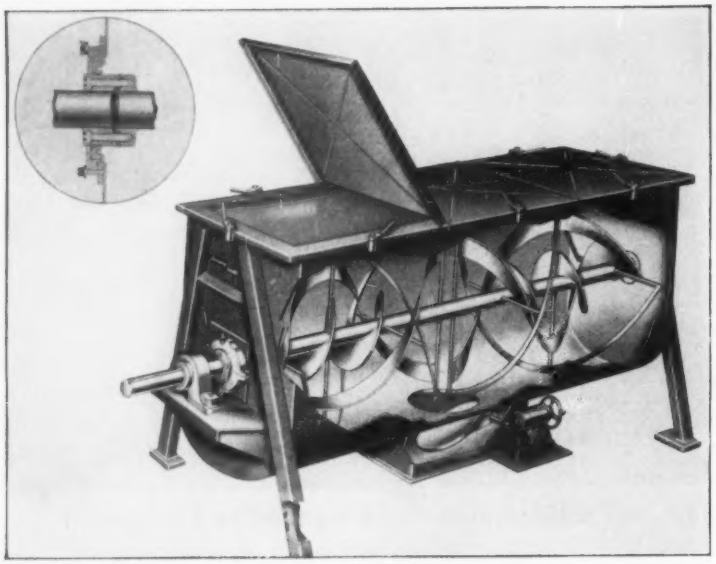
Multipacks 2-to-12-Unit Cartons at 70 Per Min.

This unit handles a wide variety of cans, bottles, and jars in single or double line at speeds to 70 cartons per min. Typical products packed: Beer, soft drinks, and concentrates.

Called Wrapak 70, it forms a special carton that takes 2-12 units, and accommodates various types of cans—chime, chimeless, aerosol, screw-type, and cone-top. In addition, it readily handles folding cartons, plastic squeeze bottles, and square or round fiber cans. Unit takes cartons in sizes up to 18 in. long, 6$\frac{5}{8}$ in. wide, and adjusts to heights up to 8$\frac{3}{4}$ in.

Packer can be converted to handle different size containers in 30 min. Feeding the carton hopper is the only manual operation.—*Container Corp. of America, 38 S. Dearborn St., Chicago.*

Circle 20 on Reader Service Card



Ribbon Blender Combines Sanitation, Mixing Efficiency

Designed to meet the most stringent sanitary codes while maintaining top mixing efficiency, this radically new line of ribbon blenders is offered in nine sizes in carbon steel or stainless. Capacities range 16-300 cu. ft.

As shown in cutaway diagram, its heavy tub end plates are rolled to provide 1-in.-radius corners, which eliminates material hang-up, and flushwelded to minimize agitator-to-tub clearance. Top edges of tub are flanged to smooth radii on corners for ease of cleaning.

Unit's legs are of tubular "A"-frame construction, which eliminates dust collecting, and its tubular shaft minimizes deflection. Shaft couplings are fastened by axial cap screws from outside of tub. This permits removing the agitator vertically for easy cleaning—with bearings and stub ends of shaft in place. Depending on material, three types of shaft seals are available—lip seal, air-purge style, or stuffing box.

Discharge gates, either swing or slide, are curved to fit tub bottom. Mixer cover has cross creases for stiffness and extended flanges for improved sealing. Cast handles permit quick clamping and absence of horizontal "stringers' on floor greatly simplifies cleaning under unit.—*Strong-Scott Mfg. Co., 451 Taft St., N.E., Minneapolis.*

Circle 21 on Reader Service Card

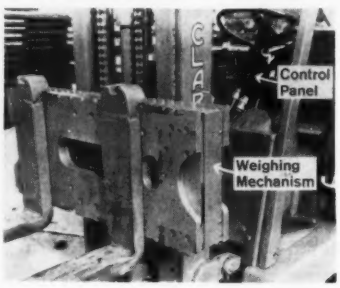
Lids Foil Trays at 600/Min.

New foil-container closer ACM-200 handles either board or rigid-foil lids and operates at up to 600 containers a minute.

Maker states production rates can be adjusted instantly, with machine featuring positive indexing into, and discharge from, the closing die. Automatic lid depositor is also available.

Unit may be leased or purchased, with delivery 4 to 6 weeks after order.—*Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Ave., Chicago.*

Circle 22 on Reader Service Card



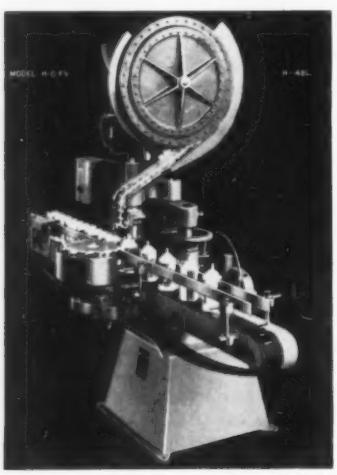
Fork's Weighing Attachment Eases Inventory Control

Termed accurate to 0.2% of its 5,000-lb. capacity, this lift-truck weighing attachment simplifies inventory control by weight. Typical applications: Checkweighing of receivables, weighing of intra-plant shipments, and batch-process tasks.

Controls for unit (Baldwin-Clark), including weight indicator, are mounted on truck steering column within fingertip reach of operator. Weighing mechanism is mounted between upright and fork plate, and weight of load is applied to a steel column in a load cell. Resulting compression is sensed by a strain gage and translated into pounds on instrument panel.

A zeroing-out control permits operator to disconnect weights of pallets or containers if only net weight of load is desired.—*Clark Equipment Co., Industrial Truck Div., Battle Creek, Mich.*

Circle 24 on Reader Service Card



Valves Aerosols at 120/Min.

All types of aerosol valves (other than those requiring dip tubes) are sorted and applied by new Model H-O-E-V capping unit, which operates at speeds up to 120 valves a minute.

Included is sorting hopper, conveyor, and inserting mechanism. Vari-speed drive permits synchronizing to associated equipment. And frequently cans of varying heights (same dia.) can be handled with the same star-wheel arrangement. Changeover for different size cans can be made in a few minutes.—*Consolidated Packaging Mach'y Corp., Buffalo, N.Y.*

Circle 23 on Reader Service Card

Continuous,

Highest Precision,

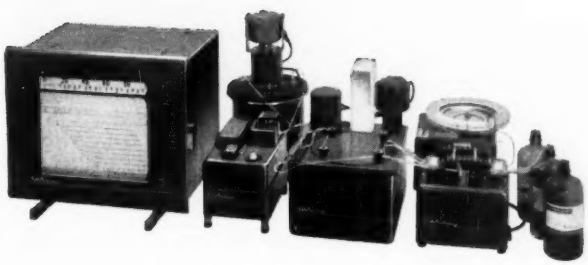
Automatic Chemical Analyses...

ON-STREAM

with the *AutoAnalyzer*®

The Technicon AutoAnalyzer is a simple control system for continuous quality control of the highest precision. Standardizes product by continuously controlling variables in every stage of production. Insures production time scheduling and eliminates reruns.

For complete information plus detailed application data about the AutoAnalyzer, use the coupon below. No obligation, of course.



TECHNICON CONTROLS, INC.
20 Saw Mill River Parkway, Chauncey, N.Y.
Gentlemen:

Please send me the TECHNICON AUTOANALYZER BROCHURE plus other pertinent data. I am particularly interested in the following applications:

- ☐ Control of Constituent Proportions
- ☐ Detection of Trace Materials
- ☐ Taste ☐ Color ☐ Consistency
- ☐ Assay ☐ Purity ☐ Pollution

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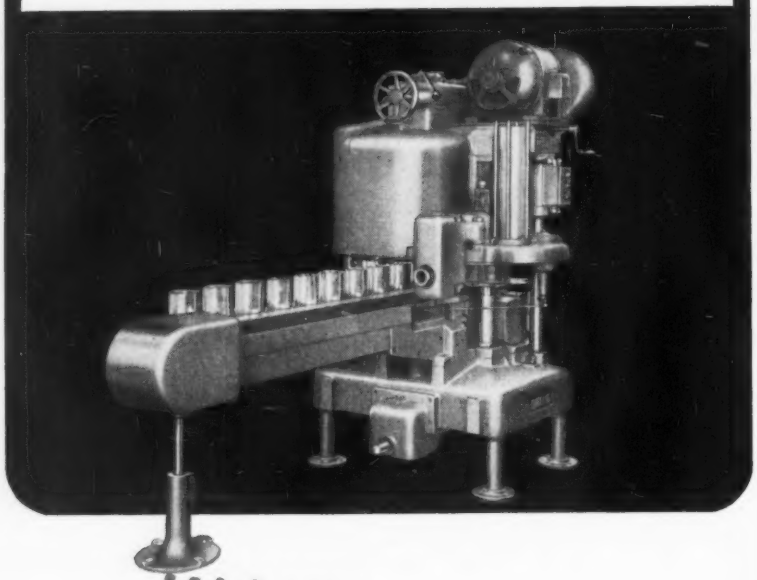
TECHNICON CONTROLS, INC.
Chauncey, New York

For more data, circle 321 on Reader Service Card

Swing To...

ANGELUS
CAN CLOSING MACHINES



Welcome to Angelus Booth #5

Annual Canning Machinery and Suppliers Association Convention, Conrad Hilton Hotel, Chicago, Feb. 20-23, 1959.

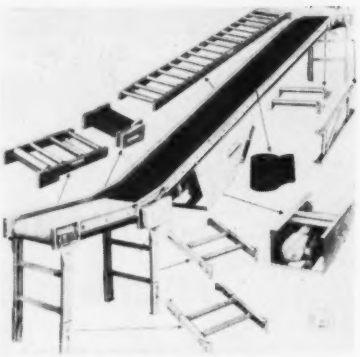
The Angelus exhibit this year, as in the past, will provide helpful and constructive consulting assistance for general as well as specific canning line operations. Staff members from our engineering, development and servicing divisions will be in full time attendance to serve you. We cordially invite you to Angelus Booth #5.

Angelus machines will be demonstrated and our technical staff will be pleased to show you how Angelus can make your canning lines more profit with low investment in equipment.

Angelus has over 45 years of experience and is the nation's only manufacturer exclusively producing automatic round can closing machines.

ANGELUS
Sanitary Can Machine Company
Cable Address "Angelmaco" Western Union Code
4900 Pacific Boulevard • Los Angeles 58, Calif.

Equipment & Supplies



Kits for 'Tailored' Conveyors

Easy assembly to make plant-tailored conveying installations is feature of new series of E-Z-Bild pre-engineered components.

With these units, even the unskilled can readily erect inclining or declining roller-bed belt setups in any desired length and in belt widths ranging 10 to 22 in.

Full line includes straight sections, top curves, feeder sections, drives, take-ups, belts, idlers, floor supports, and ceiling hangars.

Maker says that reversible end and center drives can be supplied in various hp. ratings.—*The Alvey-Ferguson Co., 3027 Disney St., Cincinnati.* **Circle 25 on Reader Service Card**

Elevator Moves Loads Gently

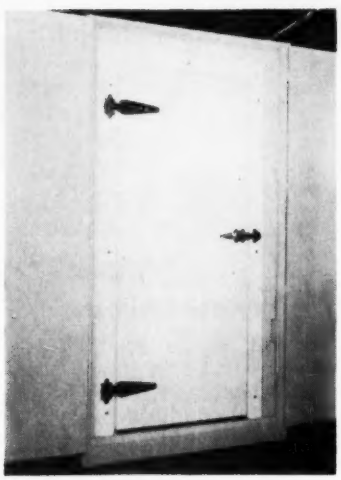
This new tray-type conveyor offers rapid moving, elevating, lowering, and transfer of a variety of fragile bulk loads.

Called Econ-O-Lift, its trays assemble into an interlocking bank

at the product-receiving point, which permits fast, continuous loading of goods such as candy, baked products, cereals, frozen foods, and coffee. After passing the loading point, units separate again to provide ample space for level travel of trays, even when elevating, lowering or on turns. This prevents tilting of trays and subsequent spillage at undesired points.

When trays reach the unloading area, the product is automatically dumped on the run, then trays quickly return to horizontal position. *Econ-O-Veyor Corp., 224 Glen Cove Rd., Glen Cove, N. Y.*

Circle 26 on Reader Service Card



Plastic Cold-Storage Door Curbs Refrigeration Loss

Lightweight and flush-fitting, this plastic cold-storage door and frame unit reportedly cuts both refrigeration loss and cleanup time.

Called Jamolite, it is termed much easier to open and close than wood or metal-clad doors, also costs less than previous units of comparable insulating efficiency. Hermetically sealed construction offers longer door life under high humidity conditions. Generally, less aisle space is required for full door swing and less bulky hardware may be used. Units are available in white and other attractive colors.

Insulation employed is foamed-in-place polyurethane plastic with a superior K factor of 0.21 at 75F. Thus, 4 in. of foam provides the insulation necessary for coolers and most freezers. Average-size plastic door weighs 70-80 lb., about one-fourth that of an equally effective metal-clad unit. (Turn page)

Planning ahead can save $20,000 on fluid mixing

An idea from your LIGHTNIN Mixer representative's briefcase

This engineer is listening to an idea that's going to save his company $20,000 on fluid mixing.

He's working on a process that will employ mechanical mixers. But in a year or so, process requirements are expected to change, throwing 15% greater load on the mixers.

Problem: how can he anticipate this change *now?*

Solution proposed by LIGHTNIN Mixer representative: install standard turbine-type LIGHTNIN Mixers geared for the immediate job, but sized to handle the expected load.

When requirements increase, simply change impellers and two gears in each mixer—providing correct power input for the new conditions at minimum expense.

What this man can do for you

This is one example of the many ways your LIGHTNIN representative can help you get efficient fluid mixing at lowest long-term cost.

He can give you better service on fluid mixing than anyone else—because he has seen and done more of it.

Take advantage of his unmatched experience by putting him on your process-design team. For prompt help on any fluid mixing operation, call him in now. He's listed in Chemical Engineering Catalog. Or write us direct.

Lightnin® Mixers

MIXCO fluid mixing specialists

MIXING EQUIPMENT Co., Inc., 143-b Mt. Read Blvd., Rochester 11, N. Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 10, Ont.

For more data, circle 323 on Reader Service Card

"FAMOUS NAME" *food products ride on* WISSCO BELTS

Top-flight food plant operators choose Wissco Belts for their long-lasting, trouble-free performance in vital process-conveying operations.

The Charms Company use Wissco Stainless Steel Balanced Spiral Belts to process Charms gum drops through a steam bath, and over 4,000 feet of Wissco process belting to convey the daily production of some 3 million Charms tablets through a completely automatic cooling operation. In a high volume operation like this, any belt downtime would put a sizeable dent in production and add considerably to operating costs. Charms reports: "No downtime losses due to a Wissco Belt failure . . . no mechanical maintenance required in 20 years of use."

Megowen Educator Food Company, Lowell, Mass., advise that: "Our six Wissco Stainless Steel Spiral Belts have enabled us to double the shelf-life of our products by assuring rapid, complete cooling before packaging . . . have helped us maintain an uninterrupted production flow since we started using them in 1938."

This extraordinary kind of performance is common wherever Wissco Belts are used. Wissco's exclusive thin, flat spiral construction reduces the major causes of belt trouble—stretch, distortion, and breakup. Wissco's open mesh weave permits efficient air circulation, effective cooling and heating operations, unobstructed liquid runoff.

Carbon and alloy steel belts are supplied to specific application requirements.

Mail in the coupon below . . . without obligation . . . for more information on Wissco Belts.

WISSCO BELTS CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

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( ) Please send me, by return mail, your new folder on Wissco Belts for Food Plants.
( ) Please have a Wissco salesman contact me for an appointment.

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FE-2

Equipment & Supplies

Frames and door exteriors are of glass-cloth reinforced polyester, which is easy to clean with soap and water or commercial cleansers. Smooth, uninterrupted surfaces eliminate trapping of dirt. Moreover, hardness of this plastic (80-103, Rockwell M Scale) resists scratching and staining.—*Jamison Cold Storage Door Co., Hagerstown, Md.*

Circle 27 on Reader Service Card

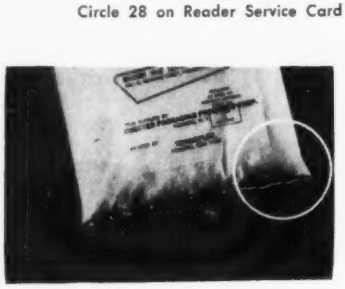
2-Speed Floor Cleaner

Termed first to offer two-speed motor in ½- and ¾-hp. capacities, new floor machine is designed to accelerate proper maintenance.

At one switch setting, cleaner operates at 105 rpm. for scrubbing and waxing. Then flipping handle switch boosts running speed to 160 rpm. for polishing, buffing, or dry cleaning. There's no need to change gears or stop motor.

Units (General KC) are available in four brush spreads—15, 17, 19 and 21 in.—*General Floorcraft Inc., 3630 Rombouts Ave., Bronx, N. Y. C.*

Circle 28 on Reader Service Card

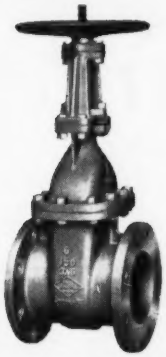


Shortens Tabs, Saves Film

Up to 1 in. savings of film per bag are reported with use of Trim Seal, new automatic sealing and cut-off device, on the Verti-Pak packaging machine.

Thus, overall film economies rang-

SPROUT-WALDRON



In this **Split Wedge Gate**

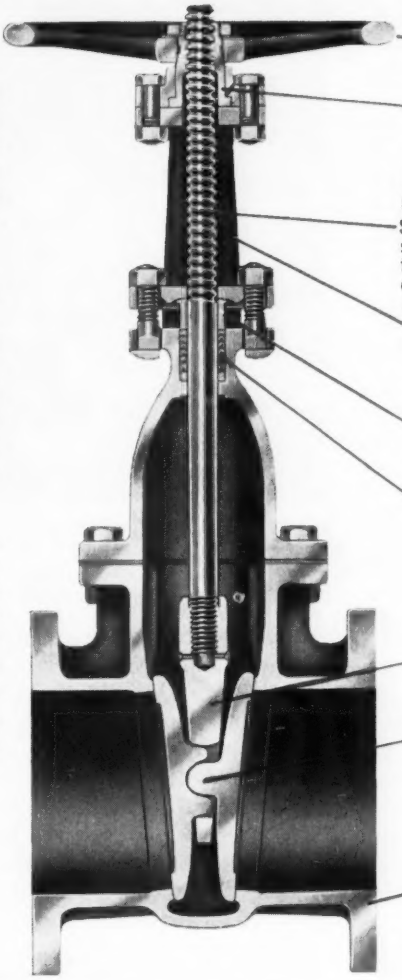
you can see why it pays to

Specify JENKINS for STAINLESS STEEL Valves, too

This picture shows the many points of excellence in the design and construction of Jenkins Fig. 1327 Split Wedge Stainless Steel Gate Valves. Compare them with any valve you know. You'll conclude that it's hard to beat Jenkins at making valves, no matter what the material.

But no picture can show the quality of the castings . . . the precision machining . . . the rigid inspection and testing that have gone into this valve. All of these are as important as design and metal alloys in assuring long, dependable, economical valve service. And, all of them are up to the peak standards for which Jenkins has been known for almost a century.

SEND FOR NEW CATALOG of Jenkins Stainless Steel Valves. You'll find in it the patterns you want, in a choice of alloys that satisfy the requirements of practically all corrosive services. Also, you'll see that these Jenkins valves meet valve industry specifications and the high standards established by the leading users of stainless steel valves. Jenkins Bros., 100 Park Avenue, New York 17.



WHEEL of high strength malleable iron designed for firm grip and easy operation.

YOKE BUSHING, easily renewable. Made of bronze, for ideal thread engagement with stainless steel spindle, to prevent seizing or galling of spindle threads. Bushing of stainless steel is optional.

SPINDLE has long thread bearing surfaces with correct lead for easy, tight closing. Screws into wedge carrier, then secured by a stainless steel pin.

YOKE BONNET has liberal space between yoke arms for easy access to packing box. Precision machined flange face assures uniform contact with gasket for a tight body-bonnet joint.

GLAND consists of two pieces — gland flange and gland follower — eliminates binding of follower in case gland bolts are tightened unevenly.

PACKING of Chevron-type Teflon in large packing box prevents leakage. Only a minimum load is required on gland, extending service life of packing.

WEDGE CARRIER connects wedge to spindle and raises or lowers it. Husky in size to stand any operating strains.

SPLIT WEDGE is the ball-and-socket design which automatically adjusts to the tapered seating surfaces for positive shutoff. The discs, revolving freely in the wedge carrier, produce a self-cleaning action on seating surfaces and reduce possibility of galling and seizing.

BODY —Through-port design for full, free flow. Ample wall thickness and good design provide extra strength to withstand stresses. End flanges conform to M.S.S. specs.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES

Sold Through Leading Distributors Everywhere

JENKINS BROS., 100 Park Avenue, New York 17, N. Y.

☐ Send the new stainless steel valve catalog

☐ Have a representative call on me

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COMPANY.....

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SPROUT-WALDRON Pointers

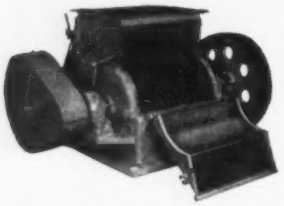
for Mixing and Blending • Size Reduction
Size Classification • Bulk Materials Handling • Pelleting and Densifying

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Penna.

PHENOLIC STOCK REDUCED IN SAW TOOTH CRUSHER

The reduction of calendered sheeting for phenolic molding compounds is being accomplished in a single pass through a heavy duty Sprout-Waldron saw tooth crusher. The warm material comes to the crusher in strips 6" to 9" wide, 12" to 18" long and in a variety of thicknesses. It is reduced to approximately ½" square pieces.

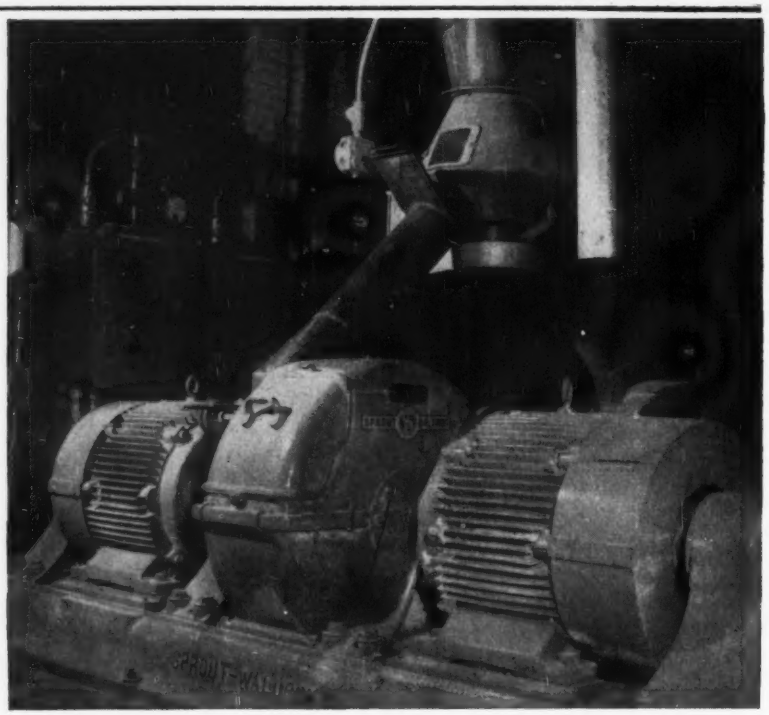
This precision-built heavy duty 16 x 25 Saw Tooth Crusher has been in successful operation at the General Electric Company plant in Pittsfield, Massachusetts for over 10,000 working hours, and it is still going strong. Its hard faced 16" diameter breaker saws are designed specifically for the reduction of tough or brittle materials. In fact, everything about this crusher suggests high productivity under the most demanding conditions. Here are some of the key design points:



This Sprout-Waldron 16 x 25 Heavy Duty Saw Tooth Crusher has given more than 10,000 hours of satisfactory service in the crushing of phenolic stock at General Electric.

1. Precision-built.
2. Hinged covers to facilitate inspection or servicing.
3. Rugged construction. Alloy steel round shafts, mounted on large roller bearings.
4. Close fitting shrouds to prevent material by-passes.

For details, request Advance Specification Sheet No. 204.



STREAM SPLITTER KEEPS ATTRITION MILLS ON THE RUN

A few years ago the American Distilling Company installed a 26" Sprout-Waldron double runner attrition mill for the grinding of corn, milo, rye, barley malt and other ingredients used in the production of Bourbon Supreme Whiskey, corn and rye whiskeys and grain neutral spirits. The mill discharged into a mechanical handling system consisting of a screw conveyor and bucket elevator.

As the need for expansion became obvious it was decided to install an identical Sprout-Waldron attrition mill to operate in parallel with the existing machine, providing greater flow rate, reduced wear and simplified maintenance.

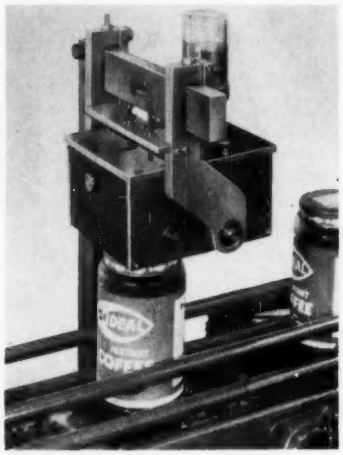
The key to the new system is a Sprout-Waldron Model VA-5 stream splitter with two outlets which divides the flow equally between the two attrition mills. Four whole grain storage bins discharge to a common Sprout-Waldron 12" x 18' screw conveyor. The center outlet of the conveyor allows the grain to pass over a magnetic separator on the way to the stream splitter. As the ground grain emerges from the attrition mills it is conveyed to the roof of the building by a Sprout-Waldron 50 hp 44" Pneu-Vac negative pressure system to another ground grain storage bin where it is held for further processing into quality whiskeys. For the facts on the Sprout-Waldron line of precision stream splitters, ask for Bulletin 137-B

CP/106

ing to 15% may be realized, states maker.

In operation, device eliminates (see photo) lengthy tabs, which in many cases aren't needed and only raise package cost.—*Mercury Heat Sealing Equip. Co., 2601 N. Howard St., Philadelphia.*

Circle 29 on Reader Service Card



Imprints 100 Lids Per Min.

Overhanging the conveyor line, this midget imprinter automatically marks price, code, etc., on up to 100 jar lids per min.

Unit operates on both flush and recessed lids up to ⅜ in. deep. It uses fast-drying fluid inks of any color and permits accurate positioning of imprints in any location. Unique ink feed and impression controls reportedly eliminate irksome adjustments.—*Adolph Gottscho, Inc., Hillside, N. J.*

Circle 30 on Reader Service Card

Valve for Precision Flow

Compact and dust-tight, this new general-purpose valve is designed for control of blending, milling, convey-

oust it with a Dow Corning SILICONE DEFOAMER!

When foam moves *in*, efficiency moves *out* . . . production goes down! Costs go up! If foam is hogging space in your plant, knock it down with Dow Corning SILICONE DEFOAMERS . . . most versatile and effective foam killers made!

1 oz kills foam in:

250,000 lb molasses

41,666 lb soft drink syrup

20,833 lb chewing gum base

FREE SAMPLE! Make your own test. Return coupon below for generous *trial sample* of a Dow Corning SILICONE DEFOAMER. No obligation, of course.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

5514

NAME

TITLE

COMPANY

CITY ZONE STATE

My foamer is

Oil system

Aqueous system

Other

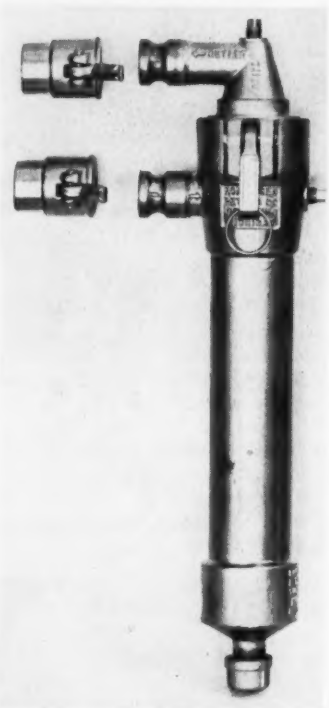
For more data, circle 327 on Reader Service Card

ing, etc., of dry powders and granulations.

All components of unit (Solids Flow) are precision machined for complete interchangeabilty. Body is covered with a removable Neoprene liner. Vane and "O" ring seal shafts are of 18-8 stainless. Discharge handle operates against a radial positioning plate that locks valve securely in position.

Units (1½ in. thick) are available in 8, 10, and 12-in. sizes, with 8¼, 10¼ and 12¼-in. openings and 10½, 12½ and 14¾-in. o.d. Accessories include special adapters for mounting in existing equipment, a plastic bag adapter, and a close-off cover for use on vacuum vessels.—*Patterson-Kelley Co., East Stroudsburg, Pa.*

Circle 31 on Reader Service Card



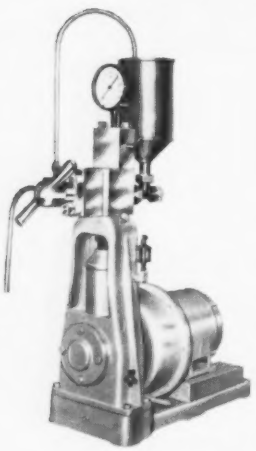
Filtration Efficiency Cited For Quick-Coupling Unit

Fitted with durable screens of Monel or 316 stainless, this filter reportedly gives extremely fine separations.

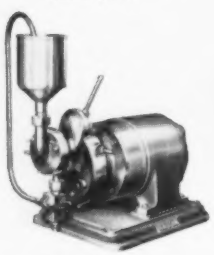
Quick-couplers on inlet, outlet, and body enable easy access to filter elements for cleaning. Units are available in 20-700 mesh, and withstand pressures to 300 psi., temperatures to 450F. Their flanged screens climinate short-circuiting.

Typical filter applications include

What Goes On In This
GAULIN HOMOGENIZER
Can Save You Money in Blending, Dispersing, Emulsifying



Laboratory Homogenizer Bulletin LH-55



RE Colloid Mill Bulletin C-57

Gaulin *Particle Control* . . . the skill of knowing the one best way to disperse, emulsify or blend . . . can bring dollar savings to your processing.

Homogenizer, Sub-Micron Disperser or Colloid Mill . . . members of the GTA team . . . can improve mixing or blending to such a degree that ingredient costs can be reduced, product quality improved, difficult formulas homogenized.

It's no secret, but it takes know-how: That's what GTA . . . Gaulin Technical Assistance . . . is for. Send us your problems or write for Technical Bulletins H-55, LH-55, D-55, and C-57. Or if you prefer to try Particle Control in your plant, rent a Gaulin Laboratory Homogenizer or Colloid Mill for only $75.00 a month.

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MANTON Gaulin

73 Garden Street, Everett 49, Mass.

World's Largest Manufacturer of stainless steel, reciprocating, rotary, pressure exchange pumps, dispersers, homogenizers and colloid mills.

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GAYLORD DEPENDABILITY
KEEPS YOUR PRODUCTION ROLLING

You get a clear track to corrugated boxes when you signal Gaylord to start the run. In all lines of industry, Gaylord has a well earned reputation for delivering the packaging . . . so you can package and deliver the goods . . . on schedule.

Regular corrugated containers in big volume runs, or engineered packaging, give your G-Man the green light . . . keep production rolling profitably.

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CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

Stabilized with KELCOLOID®

after many months on the shelf, your product looks

For Kelcoloid solves instability of your emulsions, suspensions, syrups, sauces.

With Kelcoloid, you produce smoother tasting, stable and uniform products of superior flavor release and natural color.

EMULSIONS: Kelcoloid proves the positive way to solve instability of food emulsions. This easy-to-use hydrophilic emulsifying colloid improves consistency, gives smoother textured emulsions. Markedly increases shelf life.

SUSPENSIONS: With Kelcoloid you get maximum suspension of fruit pulp, both in concentrated and diluted juice. Kelcoloid improves uniformity of frozen concentrates and diluted juices.

SAUCES: Kelcoloid produces properly stabilized products with optimum body, clean full flavor, and long shelf life.

SYRUPS AND TOPPINGS: Kelcoloid gives syrups and toppings smoother taste, desired body, and superior flavor release.

If you make emulsions or suspensions, sauces or syrups, easy-to-use Kelcoloid is worth your immediate attention. And, if you have a product or processing problem, at your service are our highly qualified technicians, ready to give individual attention to your problems. Write or phone your nearest Kelco regional office today.

YOURS ON REQUEST: Free samples of Kelcoloid and Technical Bulletin describing properties and applications of this unique algin product.

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prevention of nozzle plugging, removal of iron and pipe scale, clarification of viscose liquids, and protection of hydraulic valves and flow meters.—*Ronnigen-Petter Co.. 330 S. 27th St., Vicksburg, Mich.*

Circle 32 on Reader Service Card

A-1 Pipe Cover Is Economical

Low cost for high dependability is cited for new Foamglas Stay-Dry pipe covering designed for efficient insulation of both hot and cold conduits in the 35-350F. range.

The rigid cellular-glass material, termed permanently vapor-proof, water-proof, and non-combustible, is reported available at approximately the same cost per lineal foot as conventional types.

Units come in 24-in. lengths, wrapped in a protective kraft-and-foil jacket. Overlaps serve to link units. Vapor barrier strips go on end joints.—*Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh.*

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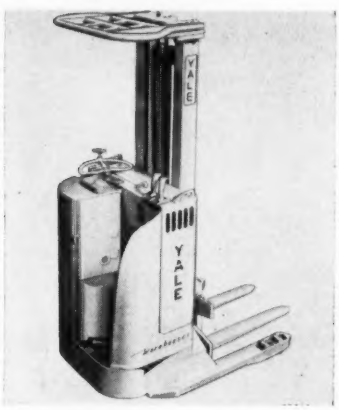

Powerful Narrow-Aisle Lifter

A cinch for new Warehouser lift-truck is the narrow aisle—for this straddle-stacker model works comfortably in 6-ft. space with normal loads.

Truck is built in 2-, 3-, and 4,000-lb. capacities and accommodates 24v. battery system.

Higher voltage provides greater

DAY

Pneumatic Conveying & Bulk Storage News

FREE! 2 valuable guides for selecting PNEUMATIC CONVEYING and BULK STORAGE TANKS

BULLETIN M-588—12 page DAY pneumatic conveying guide just off the press. Discusses types of systems, illustrates and diagrams high and low density arrangements, shows equipment and tells "why" and "wherefore" of all types of pneumatic conveying including so-called fluidizing systems.

BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equipment.

Whatever your pneumatic conveying or bulk storage problem, look first in these DAY bulletins. They are valuable aids in selecting and ordering the right equipment for your plant. For your free copies use reader service card of this magazine or write direct toDAY.

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EQUIPMENT ONLY OR A COMPLETE SYSTEM

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a new foam plastic insulation of outstanding properties

Uni-Crest is an extremely lightweight homogeneous white material with a smooth, tough surface. It is composed of minute, individually closed cells, produced by expanding beads of polystyrene. The inherent properties of Uni-Crest make it an excellent low temperature insulating material.

Uni-Crest has a low K factor (thermal conductivity) and retains its insulating value indefinitely. Lightweight, strong, flexible, it has excellent bonding characteristics, is non-dusting and non-flaking, and can be cut and handled easily. Uni-Crest is inexpensive, too.

Write today for complete specifications and installation information on application of Uni-Crest to your specific problems. We will be happy to send you this, plus an actual sample of Uni-Crest.

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Equipment & Supplies

lift speed, plus stamina for working full shift under severe duty conditions. Cited, too, is improved operator visibility, handy controls, and easy servicing accessibility.—*Yale Materials Handling Div., Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia.*

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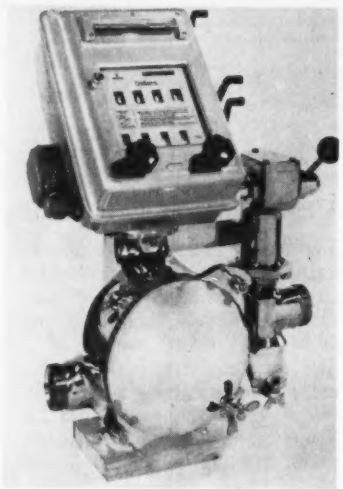

Automates Flow Control

To cut costs and improve quality and uniformity of product, this sanitary meter provides an automatic valve for delivering predetermined amounts of liquids. Further, it gives a printed ticket for each quantity dispensed.

Recording unit (Siemens) thus automates mixing and blending operations, tank-truck loading, and standardizing of products. Furnished is an electric switch for starting and stopping pumps, and controlling pneumatic or electrically operated sanitary valves.—*T. E. A., Inc., 141-21 72nd Ave., Flushing, N. Y.*

Circle 35 on Reader Service Card

INGREDIENTS

New Fermentation Nutrient

Dry nutrient for use in fermentation processes, such as vinegar making, is Amber Byf, a water-soluble fraction of autolyzed brewers yeast.

Offered as free-flowing powder, product is rich in peptones and peptides, and it is described as an excellent stimulator of bacterial growth.—*Amber Laboratories, Inc., 3456 N. Buffum St., Milwaukee.*

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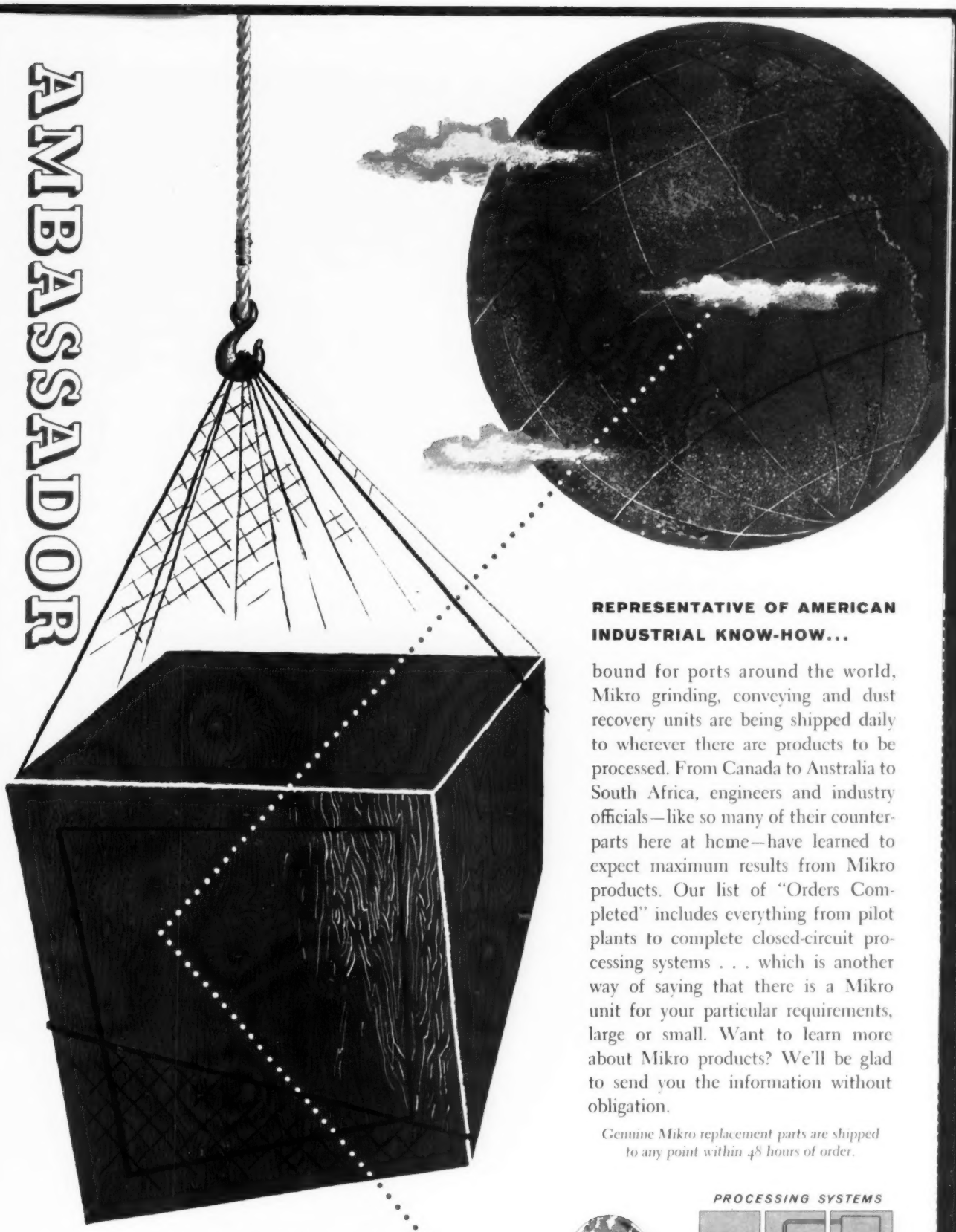
AMBASSADOR



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bound for ports around the world, Mikro grinding, conveying and dust recovery units are being shipped daily to wherever there are products to be processed. From Canada to Australia to South Africa, engineers and industry officials—like so many of their counterparts here at home—have learned to expect maximum results from Mikro products. Our list of "Orders Completed" includes everything from pilot plants to complete closed-circuit processing systems . . . which is another way of saying that there is a Mikro unit for your particular requirements, large or small. Want to learn more about Mikro products? We'll be glad to send you the information without obligation.

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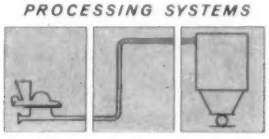

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CHEMICALS

Cleanser's Hue Tells Potency

Karysol, a versatile cleanser, indicates its eventual loss of solvent power by a sharp color change from blue to red. It is supplied as nondusting beads that dissolve readily in cold or hot water. A rapid solvent for "milk stone," pipe scale, and heavy rust, it is also effective for removing iron stains on tile and for cleaning concrete.—*Guardian Chemical Corp., 38-15 30th St., Long Island City, N.Y.*

Circle 37 on Reader Service Card

Solvent That Has 'Cling'

Of meringue-like consistency, new oil and grease solvent called Spill-Off may be either sprayed or swabbed on surfaces being cleaned. It clings—even to vertical areas—for thorough action, then is readily flushed away with water.—*Eastburn Marine Chemical Co., Morristown, N.J.* Circle 38 on Reader Service Card

Bonds Concrete, Metal, Wood

New positive-seal Adhesive 348 bonds new concrete to old, also steel, brass aluminum, wood, and certain plastics, to each other or to concrete. Long pot life, fast setting time are cited.—*The Ceilcote Co., 4883 Ridge Rd., Cleveland.*

Circle 39 on Reader Service Card

BRIEFS

Stainless-Steel Sifter, using circular and elliptical actions, separates particles uniformly, rapidly rejects oversize material. Unit (Cirlyptic) has baffles that curb clogging. Its capacity with nonfat milk powder ranges 4,000 lb. per hr.—*Hobam Inc., 1720 Military Rd., Buffalo, N. Y.* (40)

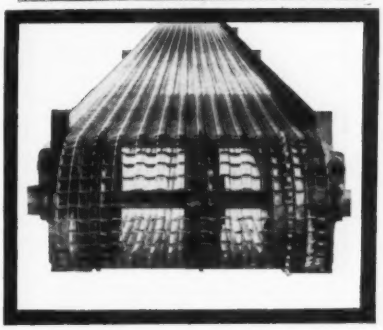
Nut Blancher efficiently removes skins from roasted nuts that can be rolled continuously, handles up to 400 lb. per min. Unit has belt of polyurethane foam that rolls nuts against screens of expanded metal and woven wire. Delivered nuts are skinless, whole, and unmarred.—*Jet-Heet, Inc., 152 S. Van Brunt St., Englewood, N. J.* (41)

New Chocolate Enrober employs twin-stream circulation system de-

Easily Sterilized While in Motion *by One Man*

LA PORTE

FLEXIBLE STEEL CONVEYOR BELTING



The open mesh feature of the La Porte belting makes sterilizing simple and easy. One man can do the job with a steam gun in minutes, eliminating down time and extra labor costs.

In addition, it assures positive drive on the sprocket, and free circulation of air and liquids around products in process.

Made of galvanized steel of the best quality, La Porte belting is available in ½" x 1", or 1" x 1" in any length and practically any width.

LA PORTE

Ask your Mill Supplier or write for illustrated literature, prices.

MAT AND MFG. CO.

BOX 124 — La Porte, Indiana

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"60-A-MINUTE" ELGIN-WRAP

Model GSA

FOR cellophane waxed paper aluminum foil glassine, etc.

★ high-speed, straight-line producer
★ fully adjustable for package variety
★ rapid changeover adjustments

Fully automatic, the great Elgin-Wrap is built to be a steady, swift and easily maintained producer! Designed to handle heat-sealing materials, it can also be equipped with photo-electric registration controls for printed wrappers. And the Elgin-Wrap is unequalled in its price field for speed.

Send samples for quotations and recommendations on your needs.

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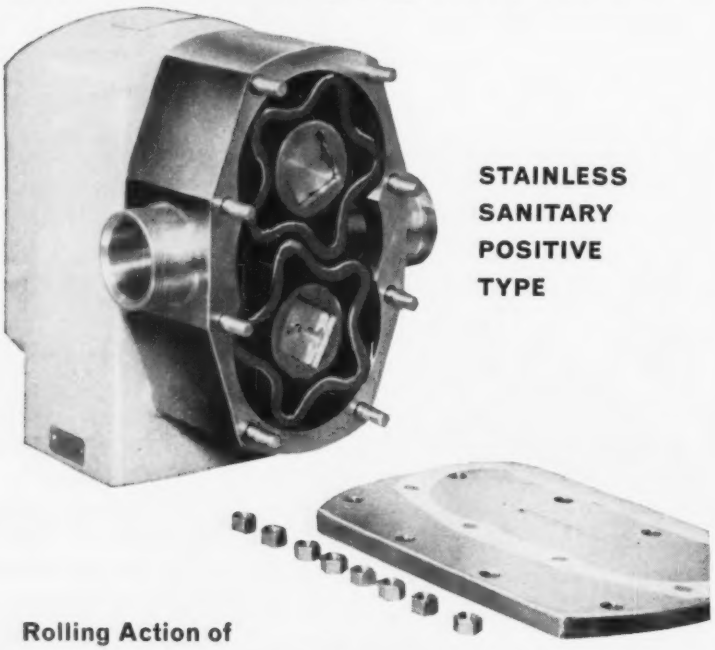
Creamery Package Rotary Pump Gives Uniform Flow from 29" Vacuum to 100 psig Pressure



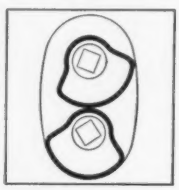
STAINLESS SANITARY POSITIVE TYPE

Rolling Action of Resilient Self-Adjusting Rotors Reduces Wear. Seals Can Be Replaced in Minutes. All Parts Can Be Replaced "On-the-Job". You Get Local Service—Local Engineering by Factory Trained Specialists.

The Creamery Package Stainless Rotary Pump with Resilient Rotors is ideally suited for smooth, continuous delivery of soups, syrups, slurries, pastes, mixes and dairy products, in a wide range of pressures and viscosities.

Sizes, capacities and drives are available for all requirements.

Large piece products, such as fruit cocktail, stews, cottage cheese and vegetables can also be pumped satisfactorily by using the newly designed single-lobe rotors pictured at the right.



Write for Bulletin H-1290.

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Equipment & Supplies

signed for accurate tempering. Excessive chocolate from wire conveyor is automatically mixed with molten makeup product, passed through water-cooled tempering tubes, and delivered to enrober's 'curtain' tube.—*Baker Perkins Ltd., Westwood Works, Peterborough, England.* (42)

Ice-Cream Truck Bodies are now being made of Type 302 stainless steel to curb corrosion. Higher initial cost reportedly will be more than offset by maintenance savings. Units interior dimensions: 157 in. long, 78 in. wide, 66½ in. high; capacity, 1,800 gal.—*Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh.* (43)

New Sanitary Pump employs easily replaceable white rubber impeller. For fluids and semi-fluids, unit is rotary displacement type.—*Waukesha Foundry Co., Waukesha, Wis.* (44)

Radial Ice Cream Hardener freezes up to 750 gph. Automatic, it saves on refrigeration. Gentle handling curbs carton damage.—*Food Mach'y & Chem. Corp., Canning Mach'y Div., San Jose, Calif.* (45)

Packaged Extraction Plant handles low-volume output or pilot research in non-centrifugal systems. Gravity column (Spiradyne) is employed.—*Podbielniak, Inc., 341 E. Ohio St., Chicago.* (46)

Bulk-Flour Cargo-Unit System cuts delivery costs. Urethane foam and air are employed with arrangement of channelized plastic panels for speedy pneumatic unloading.—*Granu-Flow Systems, Ltd., 2212 1st Ave. S., Seattle.* (47)

Accumulator and Bundler (Model 100-1) takes ice cream cartons from filler, groups them, then overwraps in glue-sealing kraft paper. Rate: Up to 2,100 gph.—*Hayssen Mfg. Co., Sheboygan, Wis.* (48)

Nylon Pudding-Cooking Nets for meat packers are described as longer-lived, more easily cleaned, non-porous, and non-rotting.—*Koch Supplies, 2520 Holmes St., Kansas City, Mo.* (49)

Protective Coating for Glassware (Armacote) lowers the process-line breakage, doesn't alter labeling procedures, has FDA clearance.—*Armstrong Cork Co., Lancaster, Pa.* (50)

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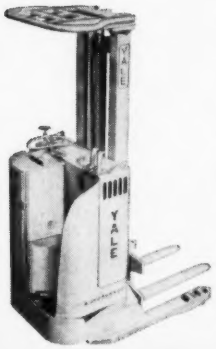
NEW Yale Warehouser builds profits 3 ways

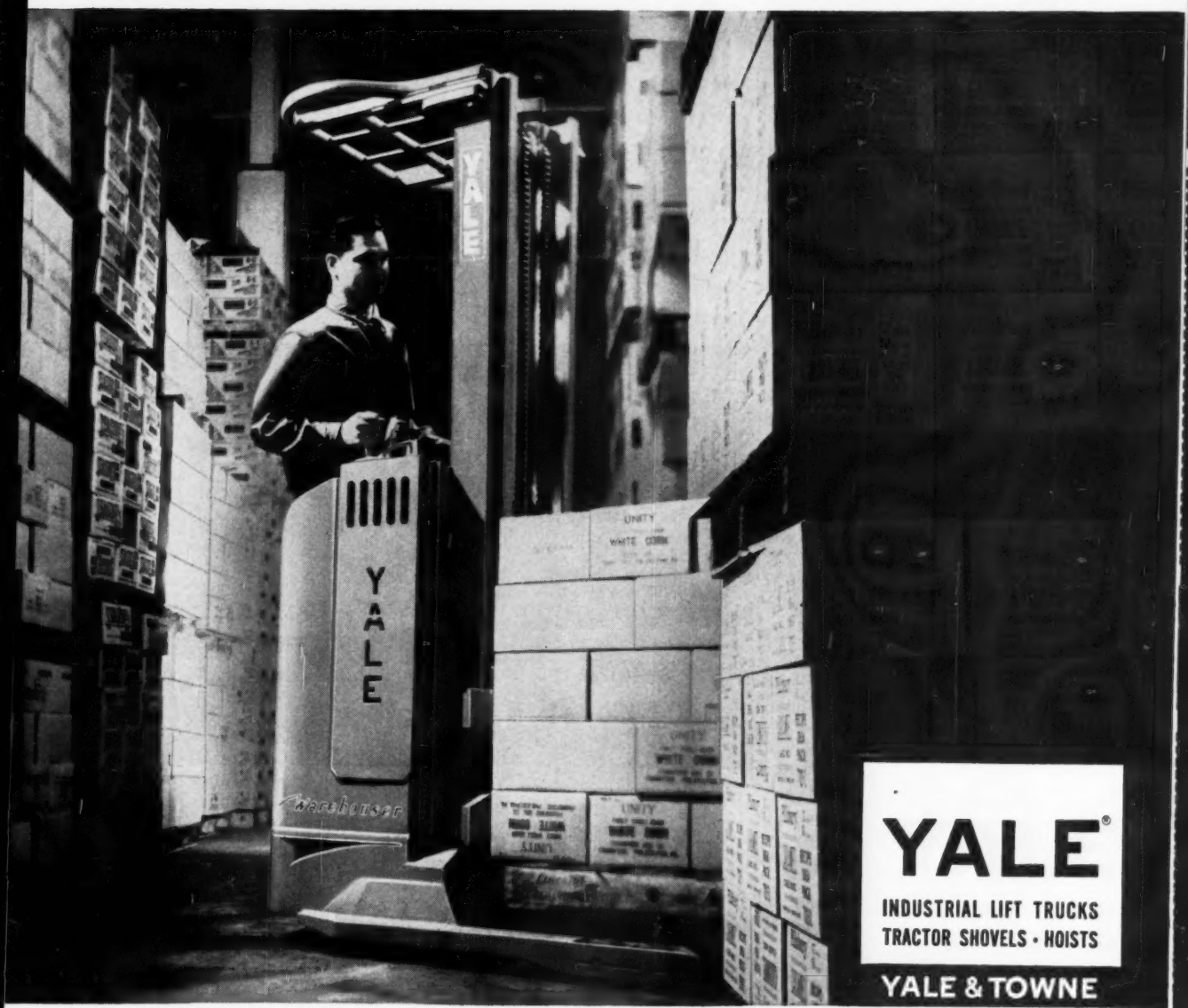
(1) 24-volt system speeds operation cycles (2) Advanced design increases operator efficiency (3) Rugged construction means more time on the job



There's more power in the new Yale Warehouser! 24-volt battery provides faster lift and travel! Faster operation cycles! And your operator will be less fatigued at the end of the day. He has comfortably positioned, easy-to-operate controls! This precision control plus increased visibility protects against product damage.

Your new Yale Warehouser will spend more time on the job! More days on the job! Operational maintenance is minimized because all components are in one fully-accessible compartment. More years on the job! Durable construction! Service access doors protected against bumps—no sprung doors. Frame, chassis, outriggers and channels are a single welded unit.

This new Yale narrow aisle truck is available in straddle and Extend-A-Fork models—in capacities of 2,000, 3,000 and 4,000 lbs. Standard 12-volt models also available. The new Warehouser takes its place as part of Yale's complete line of industrial lift trucks and hoists—gives equally efficient performance in the warehouse or as part of a fleet. Contact your Yale representative or write for brochure #1535H to The Yale & Towne Mfg. Co., Yale Materials Handling Division, Phila. 15, Pa., Dept. RT 1-V.



Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark.
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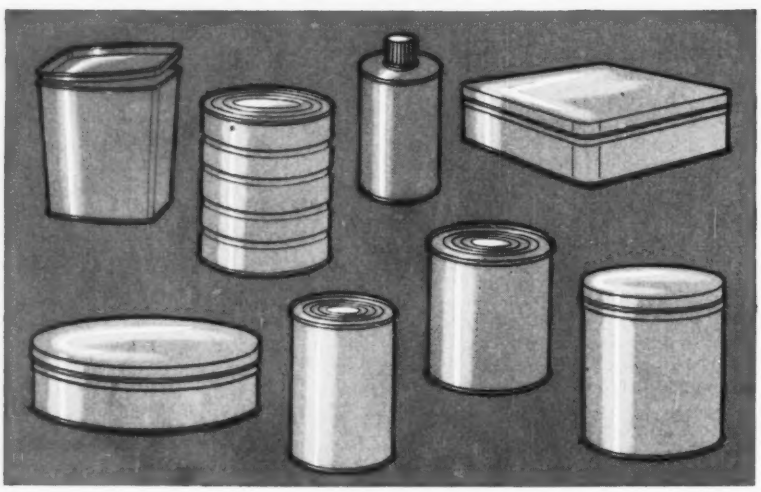

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JUST OFF THE PRESS

PLANT ENGINEERING

Heat Exchanger Motor in explosion-proof enclosure. Adjustable speed ranges from 5 to 400% of base. Available in ratings from 25 to 300 hp. Bulletin #3000.—The Louis Allis Co., Milwaukee. (66)

Saran-Lined Pipe. Spells out advantages, gives details and photos of numerous specific items. Includes price list, and geographical location of sales representatives. 40p—Saran Lined Pipe Co., Ferndale (Detroit), Mich. (67)

Motorpumps, sized from ⅓-25 hp. Includes friction tables, selection charts, typical worksheet, piping sketches. 8p.—Ingersoll-Rand Co., Phillipsburg, N. J. (68)

Electric Motors. Lists prices of induction, gear, split phase, single phase, and other type motors. 4p.—Century Electric Co., St. Louis. (69)

Conveyor Pulleys. Construction, properties, sizes, prices, and other data on vinyl pulleys. 4p.—Mercury Industries, Inc., Hillsdale, N. J. (70)

Unit Coolers. Sketches and details (with photo) ceiling-suspended models. 2p.—Drayer-Hanson, Los Angeles. (71)

Jacketed Valves for fluids difficult to move at room temperatures.—Alloy Steel Products Co., Linden, N. J. (72)

Heat Exchangers, Water Heaters. Product information and selection data. Includes tables, diagrams, typical applications. 8p.—Patterson-Kelley Co., E. Stroudsburg, Pa. (73)

Chilled-Water Coils. Units in wide range of sizes for central station and zone air conditioning systems. 2p.—Halsted & Mitchell, Pittsburgh. (74)

Hermetic Centrifugal Refrigeration. Describes and illustrates with graphs and photos motor, guide vanes, impellers and lubrication system of self-contained unit. Contains dimensional data, and chart showing various arrangements. 12p.—Worthington Corp., Harrison, N. J. (75)

Tubular Products of stainless, nickel, nickel alloy, and special metals detailed. 14p.—J. Bishop & Co., Malvern, Pa. (76)

Apex Design and controls for cyclones described with cutaway drawings, capacity charts. 46.—Equipment Eng., Inc., San Francisco. (77)

Steam Meters for 1-1½ in. lines featuring simplified replacement of orifice plates to change capacities. 8p.—Builders-Providence, Providence, R. I. (78)

Blowers & Gas Pumps. Details in solution of several air and gas handling problems. Chart outlines 20 examples. 6p.—Sutorbilt Corp., Compton, Calif. (79)

Stokers. Reissue details pneumatic spreaders for automatic handling of all sizes of coal. 12p.—Iron Fireman Mfg. Co., Cleveland. (80)

PROCESSING

Automatic Sterilizer. Describes rotary continuous unit for canned milk products. 11p.—Gebr. Stork & Co.'s Apparatenfabriek N. V., Holland. (81)

Vacuum Filter. Stainless steel unit for speedy handling of smal batches. 1p.—Filter Paper Co., Chicago. (82)

Flowmeters. Details advantages, principles, and operation of magnetic unit. Also, series of 5 data sheets on same instruments.—Fischer & Porter Co., Hatboro, Pa. (83)

Fried Pastry Equipment. Basic unit incorporates sheeter table with die-cutter. Can be equipped for automatic operation. 4p.—Anetsberger Bros., Inc., Northbrook, Ill. (84)

Poultry Refrigeration. Demonstrates with illustrations modern methods in poultry plants. 12p.—Frick Co., Waynesboro, Pa. (85)

Pneumatic Stunner. Specifications and operating procedures of automatic repeater-type tool for humane cattle stunning. 2p.—Thor Power Tool Co., Aurora, Ill. (86)

Cane Sugar Equipment. Presents company's complete line of equipment—from cane handling to refinery. Illustrates and describes recent developments such as new belt conveyor idlers, sugar Jetslingers, etc. Has section on sugar by-products. 64p.—Link-Belt Co., Chicago. (87)

Revolving Tray Ovens. Outlines performance and accommodation advantages of automatic units which both roast and bake. 6p.—Baker Perkins, Saginaw, Mich. (88)

Modernization. Round-up of product developments suggested for updating '59, by improving operating efficiency, increasing production, adding to safety, etc. 20p.—Allis-Chalmers, Milwaukee. (89)

Filters. Covers structure, flow rates, cleaning, gives thermal, chemical and mechanical information on items primarily for corrosive fluids. 4p.—Corning Glass Works, Corning, N. Y. (90)

PACKAGING

Paper Coating Additive that imparts plasticity and lubricity and ups gloss, brightness and wet strength. Nuodex Products Co., Elizabeth, N. J. (91)

Molded Plastics Package evaluator, an aid in selecting a new package for your product.—Monsanto Chemical Co., Plastics Div., Springfield, Mass. (92)

Aerosol Pressure Tester and venter checks up to 60 cans/min.; rejects faulty packages. 4p.—The Robins Engineering Co., No. Haven, Conn. (93)

Printing on Corrugated. Discusses factors from basic box design through choice of copy, number of colors, typography. Tells how to plan family packaging and point-of-sale displays, etc.—Hinde & Dauch, Sandusky, Ohio. (94)

Bottle & Can Handling Equipment. Describes and illustrates automatic can sorters and uncasers for brewers, beverage and food processors. 8p.—Atkron, Inc., Cuyahoga Falls, Ohio. (95)

Automatic Case Packer. Details design, construction, and operation of bottom loader for bottled goods. 4p.—W. F. & John Barnes Co., Rockford, Ill. (96)

Paper Coatings. How silicone imparts release and water repellency characteristics to packaging materials safely and permanently. 4p.—Dow Corning Corp., Midland, Mich. (97)

MANAGEMENT

Testing Services. Details of company's engineering facilities and services. 6p.—U. S. Testing Co., Hoboken, N. J. (98)

Business Radio. Outlines basic steps necessary in setting up company-operated mobile radio systems. 8p.—Radio Corp. of America, Camden, N. J. (99)

Chemetron Story. Traces company origin, outlines divisions and subsidiaries, and gives reason for change of name and realignment of organization. 32p.—Chemetron Corp, Chicago. (100)

Fluids Laboratory. Facilities for physical analysis and flow measurement detailed. 4p.—Fischer & Porter Co., Hatboro, Pa. (120)

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similar materials. Sizes up to 14x14 in. for capacities of 1½, 2, and 3 in. 2p.—Royal McBee Corp., Port Chester, N. Y. (101)

MANAGEMENT

Engineered Business Reading . . . how efficiently it personalizes modern management training to the individual, his job interest and self-interest . . . what other companies are profitably doing with it today . . . why it can make your company's Management Development Program more productive. 14p—McGraw-Hill Publishing Co., N.Y.C. (102)

INGREDIENTS

Dried Torula Yeast. Gives analysis and guide to advantageous use of new rich protein source. Includes U.S.P. Mongraph. — Red Star Yeast & Products Co., Milwaukee. (103)

Fumigant. Data sheet on ethyl formate, gives uses as raisin fumigant and as artificial flavoring. 5p.—Union Carbide Chemicals Co., N.Y.C. (104)

Sodium Bisulfite. Pocket-sized guide to its uses. Has handy reference chart on weights of 24 industrial chemicals. — Monsanto Chemical Co., St. Louis. (105)

Meat Curing. Gives principles and factual formulas. Includes brine tables, discusses uses of nitrates, nitrites, ascorbates, and sugars. 32p.—Koch Supplies, Kansas City, Mo. (106)

QUALITY CONTROL

Optical Aids. Guide to essential equipment such as measuring magnifiers, microscopes, pocket comparators, etc. Includes war surplus bargains. 96p.—Edmund Scientific Co., Barrington, N. J. (107)

Laboratory Glassware. Technical and physical data, plus price list for "Vycor" brand items. 12p.—Burrell Corp., Pittsburgh. (108)

Laboratory Furniture. Illustrates and describes interchangeable "package" units of pre-engineered sectionals. 24p.—Laboratory Furniture Co., Mineola, N. Y. (109)

Spectrofluorometers. Two new tools, one dual-, one triple-purpose, for assay, identification, and analysis. 12p.—Farrand Optical Co., Inc., N.Y.C. (110)

High-Purity Solvents. Five new aids to standardization of chromatographic apparatus.—Fisher Scientific Co., Pittsburgh. (111)

MATERIALS HANDLING

Oscillating Conveyors. Describes company's line for broad range of applications involving granular, free-flowing materials as well as hot, abrasive, fine, dusty, lumpy, stringy, and other difficult-to-handle products. Gives additional uses of screening, etc. 24p.—Link-Belt Co., Chicago. (112)

Dumper. Lists features of portable and stationary models for use with various types and sizes of bulk containers.—Uhrden, Inc., Denison, Ohio. (113)

SANITATION & MAINTENANCE

Steam Cleaner. Describes company's new electrically powered and heated model for light to medium duty sanitizing in confined areas. 2p.—Hypressure Jenny Div., Homestead Valve Mfg. Co., Corapolis, Pa. (114)

Disposable Wipers. Photographs and brief descriptions of in-plant applications. Contains full-sized sample. 12p.—Kimberly-Clark Corp., Neenah, Wis. (115)

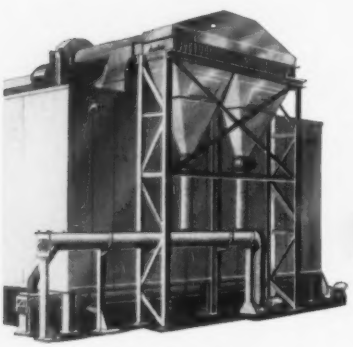
Silicone Antifoams, their chemical and physical properties, selection, application, prices. — Hodag Chemical Corp., Chicago. (116)

Safety Floor Finishes that are not waxes detailed.—Leo Silfen, Inc., N.Y.C. (117)

INSTRUMENTS

Indicating Controllers for temperature and pressure featuring minimum air usage, cartridge components, improved readability. 2p.—The Powers Regulator Co., Skokie, Ill. (118)

Temperature Indicators, Controllers & Transmitters. Specification sheets on models featuring corrosion-proof fibeglass cases, for for ranges from —400 to +1000F.—Fischer & Porter Co., Hatboro, Pa. (119)



leading manufacturers* of dehydrated food products insist on the

DUSTEX MICROCLONE

at the end of a spray dryer

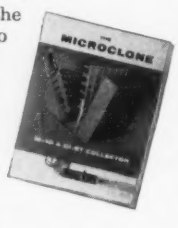
MICROCLONE cast tubes with smooth interior surfaces provide a cling-free, self-cleaning action to assure maximum material recovery, and allows the dryer to operate at maximum designed production rate—*continuously.* There's no time or place for "cooking"—hence, peak flavor...greater solubility.

THE ALL METAL MICROCLONE is protrusion free—meets the highest sanitation requirements. There are no moving parts, no filters to clog, no sludge to pump. It's virtually maintenance free!

LOW INSTALLATION COST and up to 99.8% efficiency makes the MICROCLONE the leader of the field.

*Name on request

Write today for this free folder explaining the technical characteristics of the "quick opening" Microclone.



P.O. BOX 2520 • BUFFALO 25, N.Y.

DUSTEX CORP.

Cook-Chex takes the last trace of guesswork out of production control.

1. Eliminate wrong cook schedules.
2. Keep retort baskets in sequence.
3. Guard against "by-passing" retorts.
4. Provide low-cost permanent records for your cooking-plant.

Cook-Chex is the chemically impregnated retort tag that changes from purple to green *only* after your run has been properly and completely retort processed. Hang a Cook-Chex on each basket before retorting—inspect it after withdrawing. You have the full "protection" record at a glance. It's that easy—that sure.

Used by *all* major packers. Approved and recommended by cannery inspectors. Ask *them!*

Send for Free samples.

ASEPTIC-THERMO INDICATOR CO.
11471 Vanowen Street, North Hollywood, California

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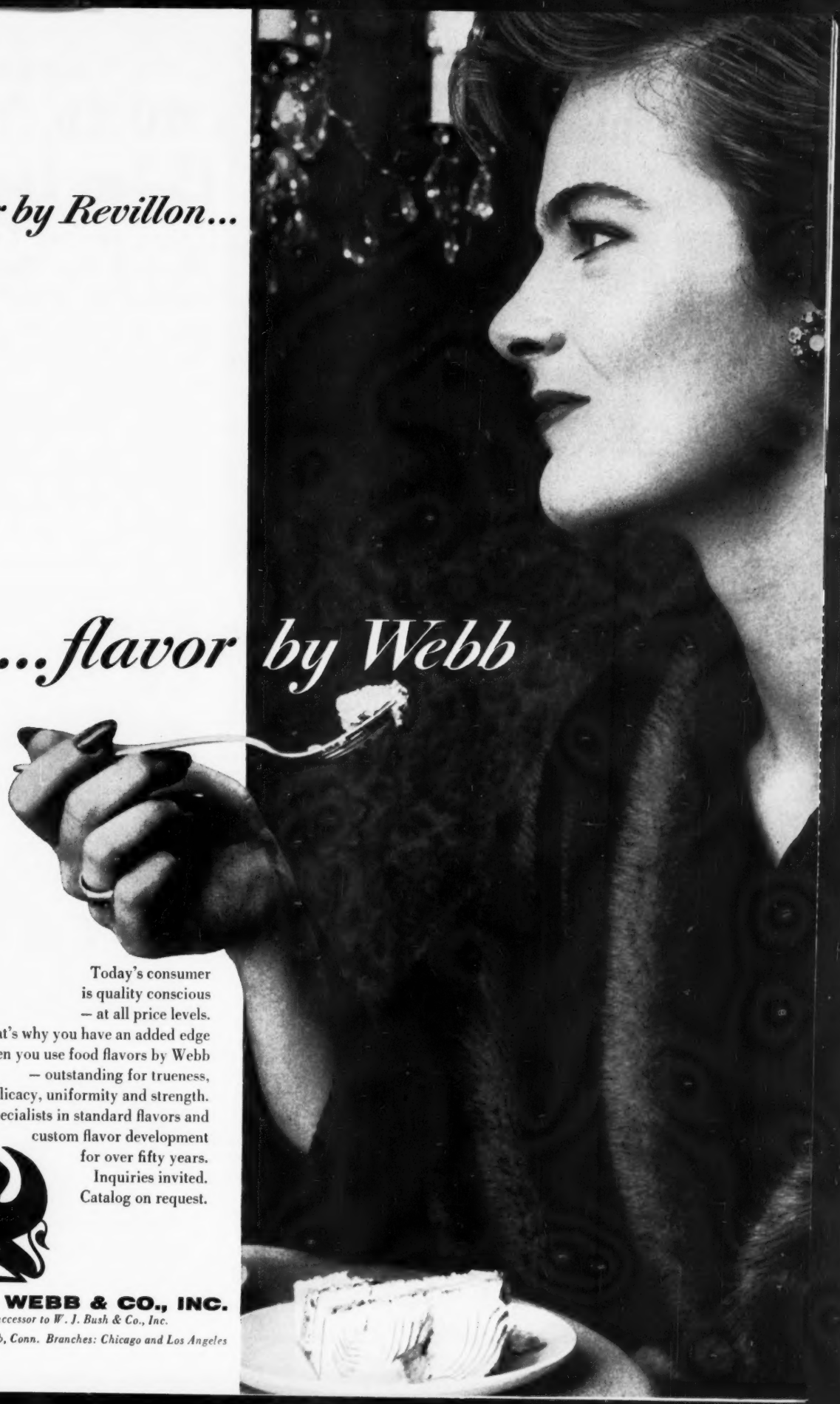
fur by Revillon...

...flavor by Webb



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is quality conscious
— at all price levels.
That's why you have an added edge
when you use food flavors by Webb
— outstanding for trueness,
delicacy, uniformity and strength.
Specialists in standard flavors and
custom flavor development
for over fifty years.
Inquiries invited.
Catalog on request.

R. D. WEBB & CO., INC.

Successor to W. J. Bush & Co., Inc.

Main Office: Cos Cob, Conn. Branches: Chicago and Los Angeles

New Invention Picks Up 40 Cu. Yd. Detachable Containers . . . 15-Ton Loads

Dinosaur picks up in excess of 30,000 pounds of granular material, white line inside container indicates load has not shifted.

DEMPSTER-DINOSAUR Combines Detachable Container Flexibility With Big Pay-Load Capacity

Unlimited Capacity

The proven savings of mechanically handled detachable containers have now been expanded to cover long, over-the-road hauls. Two DINOSAUR models are available for this work. One, for tandem trucks, handles 30,000 pounds; the other, for single axle trucks, handles 22,000 pounds. Special off-the-road models are available for loads limited only by the capacity of the truck.

For Docks and Flat Cars

Mechanically, the DEMPSTER-DINOSAUR is of extremely simple design. Components are a tipping frame, two hydraulic raise-and-lower cylinders and a double-acting cylinder which controls all container movements. No chains, sheaves or cables are used in its operation. It is the only over-the-road system that can push and pull containers on and off docks or railroad flat cars. This makes it possible to use the DINOSAUR in conjunction with "boxy-back" containerized cargo rail shipments.

The Dinosaur hydraulically pushes a container off on a dock and inside a building for unloading.

Many Sizes and Types of Containers are Available

DEMPSTER-DINOSAUR standard containers come in 21 sizes ranging from 14½ feet to 23½ feet in length and 10 to 41 cu. yd. capacity. Special cargo containers up to 35 feet, tank-type and stake side models are also available. Drop-down telescopic legs to hold container at dock height are optional on some cargo containers.

Free Booklet Offered

A free booklet which describes the operation of this new system in detail is offered by Dempster Brothers, the originator and only manufacturer of DEMPSTER-DUMPSTER Systems.

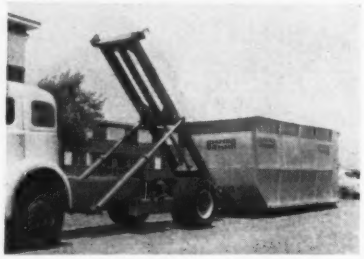
Mfd. By Patents Pending

DEMPSTER BROTHERS, Inc.

Dept. FE-2, Knoxville 17, Tenn.

Containerized Cargo, Waste & Raw Materials Handled by DINOSAUR

The newly developed DEMPSTER-DINOSAUR is a system of materials handling that employs giant containers up to 40 cubic yards and larger. It lends itself to any situation where bulk accumulations of raw materials, liquids, waste or finished products must be handled. Since one truck and one driver can automatically pick up, haul and dump or set down a number of containers, the DINOSAUR easily does the work of several trucks.



Dinosaur backs up to loaded container and engages it with lifting bail.

Container is hydraulically pulled up inclined tilting frame.

Container is pulled forward where it automatically locks into carrying position.

←For more data, circle 342 on Reader Service Card

For more data, circle 343 on Reader Service Card

USEFUL NEW BOOKS

Instrumentation and Food

NEW INSTALLATION FOR IN-STREAM FOOD ANALYSIS. *Published by Foundation for Instrumentation Education and Research, Inc. 527 Lexington Ave., New York City 17. 78 pages. Price:* $5.

Compiled from the proceedings of the pilot clinic at Rutgers University in November, 1957, this guide to latest developments is of definite interest to members of the food industry. It explains new techniques of automatic in-stream product measurement.

Food processing urgently requires new and improved tools for in-stream measurement and automatic control. The vast industry is mechanized to an unusual level. But further progress is being delayed by a basic need: a need for appropriate instrument of techniques to continuously measure the quality of food in the process and permit the application of feed back control. The clinic at Rutgers was a discussion of the barrier and an attempt to set the stage for more collaboration between instruments, specialists and food technologists.

Language of Packaging

GLOSSARY OF PACKAGING TERMS. *Published by Packaging Institute, 342 Madison Ave., New York City 17. 1958. 323 pages. Price:* $6.75.

This second edition of the dictionary of "The Language of Packaging" contains three times as many entries as the first edition. Every effort has been made to assure the accuracy of definitions by checking with acknowledged authorities in specific areas of packaging.

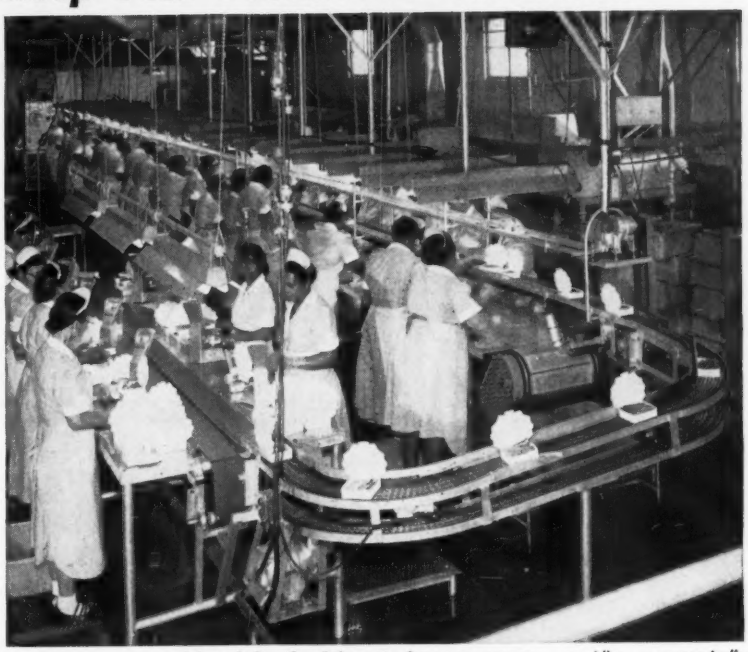
A long list of credits is evidence of the industry-wide cooperation necessary for the completion of this second edition. For the man who wants to know the "A-end" of a railroad freight car from the "yield value," this is a natural.

Plant Engineer's Guide

PLANT ENGINEERING PRACTICE. *Published by F. W. Dodge Corporation, 119 W. 40th St., New York City 18. 704 pages. Price:* $18.50.

Covering every major area of plant engineering activity, this new handbook consists of material gathered

Keep Your Product on the Move



Ashworth Omniflex Belt carries frozen asparagus . . . rapidly . . . economically

with ASHWORTH METAL PROCESS BELTS

Whether it is baking, deep frying, quick freezing, cooling or any other process operation, you can keep your product on the move better with a belt designed to the specific job.

Fabricated from any metal capable of being formed into wire, Ashworth Belts provide a conveying medium permitting processing in transit through temperatures from −50° to 2100° F. Wherever your product must go during processing, be sure to get the "right" belt for the job . . . consult an Ashworth engineer.

Illustrated literature available

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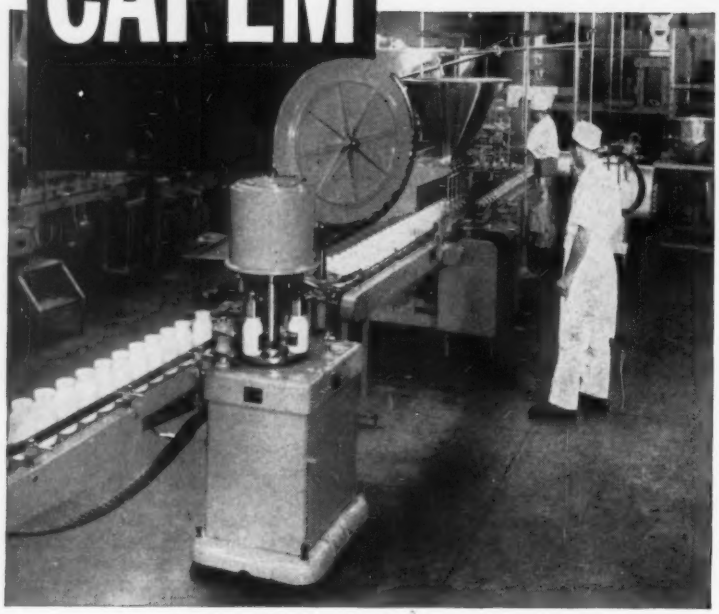
It's at the back of this magazine. For free information and literature note the number appearing at the end of editorial items and advertisements. Circle this number on the Reader Service Card and drop in the mail. We do the rest—no obligation, of course. Don't fail to look over our free editorial reprint offer on the Reader Service Page.

CUT CAPPING COSTS WITH CAPEM



PFEIFFER FOOD PRODUCTS, INC. recently installed this new mayonnaise and salad dressing line in their Buffalo, N. Y. plant. They chose a CaPeM, Model C-4-F for the capping operation.

This capper applies 7200 caps per hour and handles jar sizes from 6 oz. to quarts. It incorporates a special Consolidated chuck-arresting device which prevents the chuck from dropping over the jar if no cap is present. No mayonnaise ever gets on the chuck.

There are more CaPeM Screw Cappers in use than any other make. Users select them because they combine low initial cost, low operating cost, and a minimum of maintenance.

CaPeM applies any standard cap or cover and many special types at speeds ranging from 2,000 to 10,000 per hour. It handles bottles, jars, cans or jugs of any size or shape. It delivers a perfect LEAKPROOF seal.

For recommendations on improving your own capping operation, write Sales Manager, Consolidated Packaging Machinery Corp., 1400 West Avenue, Buffalo 13, N.Y.

CAPEM → **THE MODERN SCREW CAPPER**

and prepared by the editors of Plant Engineering magazine. Practical in nature, the new work's sole purpose is to offer tested solutions to the many daily problems that the plant engineer and his staff encounter.

More than 100 experts in fields related to plant engineering wrote the material for the handbook. Many are top plant engineers reporting detailed solutions to problems of men in their own plants. Others are technical specialists in specific fields whose work has proved valuable to plant engineers.

Watching Your Dollars

BUSINESS BUDGETING. *Published by Controllership Foundation, Inc., 2 Park Ave., New York City 16. 1958. 367 p. Price:* $12.50.

Designed as a survey of management planning and control practices, this book is a comprehensive study of the many factors contributing to the successful utilization of budgeting. It should prove quite useful to food business executives.

The study records in detail the budgeting policies and practices of several hundred selected American companies. Research is based primarily on data collected through observation and personal interviews, and data collected through mail questionnaires.

The analysis is largely based on the personal interview conducted at 35 companies, with the mail questionnaire results being used to supplement the conclusions drawn through the personal interviews.

Solving Your Problems

SUCCESSFUL PROCESS PLANT PRACTICES: OPERATION, MAINTENANCE, AND SAFETY *by Robert Davidson. Published by McGraw-Hill Book Company, 330 W. 42nd St., New York City 36, New York. 1958. 312 Pages. Price:* $10.

A how-to-do-it manual of process plant problems and their solutions and actual practice, this practical new book is aimed at foremen and junior management. Methods and devices for dealing with a large variety of day to day problems in managing, scheduling, operating, maintaining, and repairing are described and illustrated.

Based on popular articles that appeared in Petroleum Processing magazine, the book material has been edited, classified and indexed for quick reference. Whenever possible complete details—dimensions, operating conditions, for example—have been included.

GIANT FOOD, INC.'S new distribution center in Landover, Md., has nearly 120,000 sq. ft. of temperature control rooms of Armorply-faced sections, as manufactured by Annapolis Yacht Yard, Freezer Box Division, Annapolis, Md. Patented joint-locking device eliminates sealing problems, lets you assemble or dismantle and move your temperature-controlled rooms easily.

Here's sub-zero storage you can erect, expand, or move in a few hours

Freezer rooms made of Armorply metal-faced plywood panels can maintain temperatures down to −100° F, yet they permit complete flexibility to allow for future expansion. Armorply requires virtually no maintenance, never needs painting, has high impact strength, will not absorb odors, and affords vapor- and vermin-proof protection for produce, frozen foods, ice cream. Armorply rooms can be added indoors or outdoors, require only a protective roof.

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ARMORPLY®

Metal-Clad Plywood

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☐ FREE: Please send me Armorply sample and descriptive booklet, "Facts about Weldwood Armorply."

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What can you learn from a Quaker cereal sample?

You'll see a finished product of the highest quality in any one of the standard cereal products listed below, or from products tailored to your own specific requirements. But this is only half of the story, because doing business with Quaker offers many other hidden advantages:

1. The quality in a Quaker cereal sample is not just for "sampling" purposes. It represents standard mill run, and Quaker's outstanding quality control means that sack after sack, or carload after carload, you can always depend on the same conformity to specified standards.

2. Quaker can sample you in all varieties of grains—because Quaker mills all types. And for this same reason Quaker is in an exceptionally good position to give you helpful and unbiased advice on the types and grades of milled products for your particular needs.

3. Quaker's milling is backed by the finest technical research in the newest and most modern laboratory in the milling industry. Here Quaker customers can benefit from the application of the latest techniques to their own specific problems.

Whatever your processing problem, it will pay you to get better acquainted with Quaker products. For samples of cereals in which you are interested, write or phone The Quaker Oats Company, Industrial Sales Department, Merchandise Mart, Chicago 54, Illinois.

QUAKER

Quaker Standard Dry Milled Items

- **Oat Products**
  OATMEALS.....6 sieve sizes
  ROLLED OATS.....11 flake sizes
  OAT FLOURS.....8 types
- **Wheat Products**
  INDUSTRIAL FLOURS
  FARINA
- **Pre-Mixing Services**
  AVAILABLE (to your specs)
- **Rice Products**
  FLOURS
- **Barley Products**
  PEARLED BARLEY..7 sieve sizes
  BARLEY FLOURS (including one in which the enzymes have been inactivated)
- **Corn Products**
  (all electrostatically cleaned—then water washed before milling)
  MEALS.....White & Yellow
  GRITS.....White & Yellow
  FLOURS.....White & Yellow

Booklets and Reports

CITRUS PRODUCTS, AVACADOS, DATES, AND RAISINS (*Marketing Research Report No. 243*). *Published by USDA, Washington, D. C.* 134 *pages. Price:* 65¢. Study reports on American home-maker's use of and attitudes towards above foods.

REMODELING SMALL POULTRY PLANTS TO MEET INSPECTION REQUIREMENTS (*AMS-256*). *Published by the USDA, Washington* 25, *D. C. No charge.* Reports discusses practical remodeling of plants to meet compulsory inspection effective January, 1959.

MARKET POTENTIALS AND USE OF CENSUS DATA. *Published by American Marketing Association, Chicago* 3. *Price:* $2.00 ($100 *to members*). Speeches made by marketing authorities at Indiana University Seminar are compiled in this booklet.

THE TAX DEPRECIATION PROBLEM. *Published by Machinery and Allied Products Institute, Washington* 6, *D. C.* 26 *p. Price:* $1.00. Discussion of the deficiency of historical-cost accruals by reason of inflation —the main problem of tax appreciation today.

EFFICIENCY AND POTENTIAL ECONOMIES OF DUAL PURPOSE SHIPPING CONTAINERS FOR MATURE GREEN TOMATOES (*Marketing Research Report No. 257*). *Published by the USDA, Washington* 25, *D. C. No charge.* Report discusses economies possible through use of fiberboard dual-purpose shipping containers.

EDUCATION TRAINING AND UTILIZATION OF SANITARY ENGINEERS (*Conference Report* 1957) *published by National Academy of Sciences, National Research Council, Washington, D. C.* 17 *pages. No charge.* Comprehensive analysis of the sanitary engineering profession with specific reference to career opportunities and recommendations on recruitment and education.

DEVELOPING A COMPANY MANAGEMENT TEAM (*Management Report #242*) *published by California Personnel Management Association, Berkeley* 4, *California.* 12 *pages. Price:* $1. Address by David L. Harrington, Chairman of the Board of Reuben H. Donnelley Corporation.

INSECT CONTROL IN FLOUR MILLS (*Agriculture Handbook No. 153*). *Published by USDA, Washington, D. C.* 28 *pages. Price:* $ .15. Illustrated handbook prepared by Stored Product Insects Section, Biological Sciences Branch, Marketing Research Division.

NIAGARA "no frost"

● Saving labor in both operation and upkeep, "No-Frost" fully automatic refrigeration gives you always the full rated capacity of your plant. You get all the benefits of continuous production and your business makes money on lower volume. Preventing all ice or frost accumulation, "No-Frost" prevents waste of power. You cut out much expensive maintenance labor in the cold room. Your production and your quality both improve because "No-Frost" pulls the product core temperature down the quickest and holds it uniformly.

Write for Bulletin No. 105

NIAGARA BLOWER COMPANY

Dept. FI-2, 405 Lexington Ave., New York 17, N. Y.

District Engineers in Principal Cities

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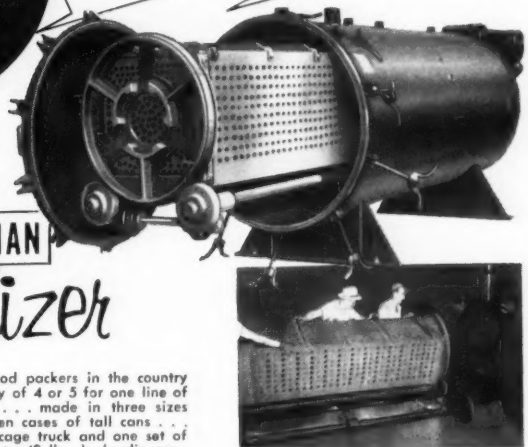
for BETTER RETENTION of ..... flavor • color • vitamins



BERLIN-CHAPMAN Sterilizer

Widely used by the largest food packers in the country . . . usually set up in a battery of 4 or 5 for one line of food at 120 cans per minute . . . made in three sizes to hold thirty, twenty, or fifteen cases of tall cans . . . equipped with one cage, one cage truck and one set of 96 trays . . . all shells tested to 40 lbs. hydraulic pressure for working pressures up to 20 lbs. Also ASME code stamping.

Write today for complete information and recommendations of sizes to meet your plant setup.

BERLIN CHAPMAN CO.
Berlin, Wisconsin

Other Berlin Chapman Products
Vertical Retorts • Brine and Pulp Tanks • Belt Conveyors • Shaker Graders • Rod De-Watering Reel • Rotary Washers • Scalders • Blanchers • Separators • Special Machinery for Food Processing.

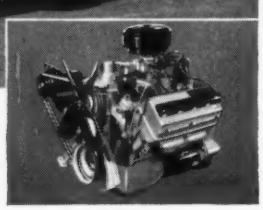
For more data, circle 349 on Reader Service Card

Go, van! Go!

And this brawny new Dodge hauler can do just that. It has the extra push (up to 210 hp.) to whisk a giant payload through bustling city traffic right on schedule. The oversized four-piston brakes to bring your heaviest cargo to an on-a-dime stop. And the short, short turning radius to wheel into a tight loading area as nimbly as a much smaller truck!

But then . . . that's typical of the dependable Dodge truck you choose—from 4,250-lb. G.V.W. pick-ups to 65,000-lb. G.C.W. Power Giants. Won't you let your Dodge dealer show you all the exclusive Dodge truck features?

today, it's real smart to choose Dodge Trucks



This 315-cu.-in. Dodge V-8—featuring exclusive dome-shaped combustion chambers and double-rocker-shaft design—is just one of the three tough Dodge engines you can select for the D400 model shown above. An economical L-head Six and two husky V-8's are available to help you tailor your truck to the job it must do.

For more data, circle 350 on Reader Service Card

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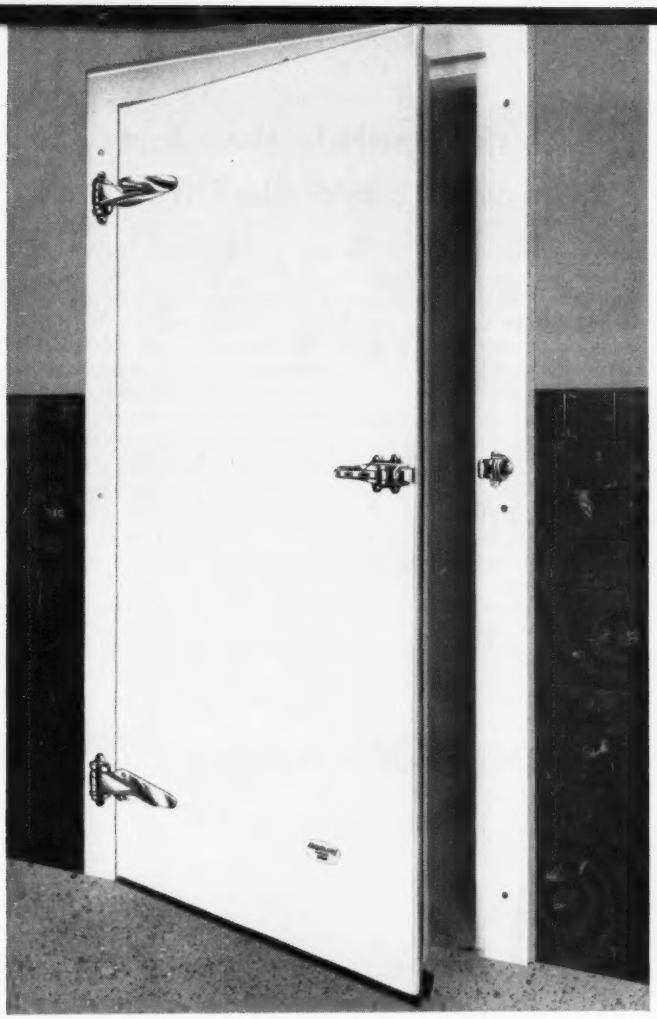
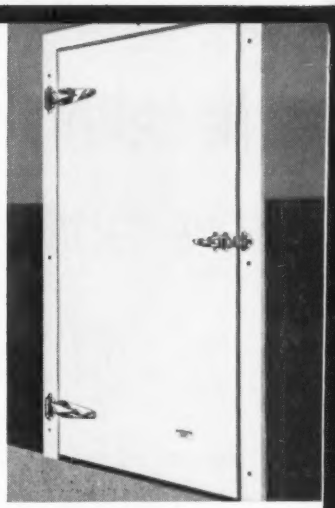




FLUSH FITTING

Walk-In Door fits flush with frame for improved appearance, easier cleaning.

LIGHTWEIGHT

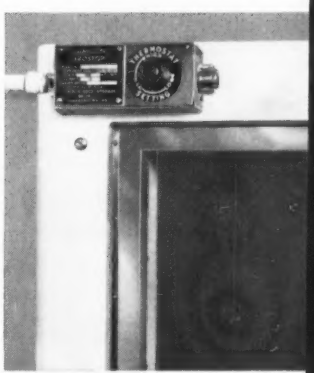
Weighs only ¼ as much as steel clad doors, uses lighter bucks similar to household doors.

Jamison announces JAMOLITE*...
lightweight plastic cold storage doors for food service

FOR THE FIRST TIME—a revolutionary new concept in cold storage door design and construction . . . JAMOLITE Lightweight Plastic Doors now provide better appearance, improved performance and lower cost! Look at these other practical advantages:

- smooth, easy-to-clean surface
- rigid, stable construction
- practically impervious to vapor and moisture
- will not warp
- available in white and other colors
- insulated jamb
- superior insulating efficiency

JAMOLITE Plastic Doors are available as Walk-In, Reach-In, Horizontal Sliding and Vertical Sliding Cold Storage Doors. See how this brand new Jamison development can be used in your installation for replacement or new construction. Write for descriptive bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.



FREEZER DOORS

Jamison FROSTOP is applied to JAMOLITE head, sides and sill to prevent ice formation in freezer use.

*Jamison Trademark

JAMISON

COLD STORAGE DOORS

It takes eye-appeal to sell the modern shopper...

Give products the sparkle that lasts . . . "polish" them with Fibra-Flo Filter Aids

WHEN your bottled beverage or liquid product has to sell itself, it's sound point-of-sale policy to equip it with all the eye-appeal you can. How? Filter the product to give it a long-lasting high "polish." You can accomplish this operation quickly and economically with Johns-Manville Fibra-Flo® Filter Aids.

Fibra-Flo Filter Aids combine the many fine filtration advantages of Celite* diatomite with the adsorptive properties and mechanical strength of asbestos fiber. Used as a pre-coat, it forms a firm cake of millions of microscopic filter pores. It removes even the most minute suspended solids and colloidal matter which cloud a fine product's natural clarity and affect stability. And it does so with no effect on the most delicate of flavors.

Fibra-Flo also offers many operating advantages. Ready-mixed to form a uniform precoat, it eliminates the mess and guess of mixing. It saves costs, too, by cutting down on equipment and labor needs. That's because the filter aids are discarded after use, making it unnecessary to sterilize and recover filtermass.

Clarity is more uniform with Fibra-Flo. It forms a more stable precoat cake which resists pressure changes and overloading. Continuous addition of any of the standard Fibra-Flo or Celite grades assures uniformity throughout the filtration cycle. For further information, call your nearby Celite engineer, or write Johns-Manville, Box 14, New York 16, N.Y. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

JOHNS-MANVILLE JM PRODUCTS

RECENT INVENTIONS

PRODUCTS

Confection Comprising Whippable Protein, Water-Soluble Non-Ionic Alkyl Ether of Cellulose, Foam Stabilizer—General Foods Corp., White Plains, N. Y. No. 2,846,314.

Canned-Food Preservative Consisting of Calcium Chelate of Complex Amino Compound—Dow Chemical Co., Midland, Mich. No. 2,846,317.

Recombined Milk Containing Heat-Treated Anhydrous Milk Fat With Maximum of 4 PPM. Sulphur — Foremost Dairies, Inc., San Francisco. No. 2,847,310.

Stabilized Egg and Milk Product Comprising Homogenized Mixture of Pasteurized Milk and Cream, Milk Solids, Butter, Eggs—Chas. L. Nichols, Beverly Hills, Calif. No. 2,848,334.

Aerosol Product Comprising Dispensing Container, Aqueous Food Formulation, Fluorinated-Hydrocarbon Propellent Mixture—E. I. du Pont de Nemours & Co., Wilmington. No. 2,849,323.

Chocolate Beverage Powder Comprising Free-Flowing, Non-Hygroscopic, Cold-Water Dispersible Aggregates of Milk Solids, Flavoring—Instant Milk Co., Los Angeles. No. 2,850,388.

Moist, Quick-Curing Cheese (for Spreads) Made by Heating Salted, Acidic Curd, Separating, Curing — Wisconsin Alumni Research Foundation, Madison. No. 2,850,390.

Dry Milk Product Containing Light-Bloom Gelatin as Flavor and Texture Improver — J. L. McCarthy, Worcester, Mass. No. 2,851,358.

Effervescent Concentrate for Carbonated Soft Drinks, Including Citric Acid, Calcium Carbonate — H. Brout, Larchmont, N. Y. Nos. 2,851,360, 361.

Gelatin Product Made by Mixing Gelatin and Powdered Lactose, Moistening, Drying — Foremost Dairies, Inc., San Francisco. No. 2,851,364.

Chocolate Pellet for Pre-Mixed Foods Comprising Chocolate Center Mass, Hardened Sugar Shell, Soft Outer Coating of Chocolate Liquor, Non-Fat Milk Solids, Sugar — Pillsbury Mills, Inc., Minneapolis. No. 2,851,365.

Stable Fruit-Pie Filling Consisting of Fruit, Sugar, Distarch Phosphate Thickener — Corn Products Co., N.Y.C. No. 2,852,393.

PROCESSING

Curing and Smoking Meat by Injecting Cure, Heating, Subjecting to Circulating Smoke in Electrostatic Field, Heating to Fix Smoke—Kingan, Inc., Indianapolis. No. 2,844,478.

Improving Color of Cured Sausage by Deoxygenating a Meat-Water Emulsion, Contacting Heme Pigments With Curing Salt—Swift & Co., Chicago. No. 2,847,312.

Controlling Bloom, Color, and Taste of Comminuted Fresh Meats by Enclosing in Film of Low Oxygen-and-Moisture Permeability, Removing, Mixing in Air—Tee-Pak, Inc., Chicago. No. 2,847,313.

Peeling Produce by Successively Treating With Caustic Solution and Steam, Cooling—Food Machinery & Chemical Corp., San Jose, Calif. No. 2,847,334.

Producing Synthetic Sausage Skins From Alginates—R. Weingand, Walsrode, Germany. No. 2,847,713.

Forming a Composite Cylindrical Candy Block by Rolling Two Differently Colored Saw-Toothed Blocks, Face-to-Face and Intermeshed—Allen-Crawford, Ltd., Montreal, Canada. No. 2,847,947.

Upgrading Texture and Homogeneity of Ground Meat by Adding Sodium Pyrophosphate, Potassium Polyphosphate—Chemische Werke Albert Wiesbaden-Kastel, Germany. No. 2,852,392.

EQUIPMENT

Cheese-Making Unit Consisting of Upwardly Extending Cylindrical Trough, Spiral Augers, Feed Hopper, Molding Roll at Outlet—V. N. Dzenis, Hopewell Junction, N. Y. No. 2,840,909.

Knife-Honing Machine for Sweet-Corn Cutters — Green Giant Co., LeSueur, Minn. No. 2,846,823.

Brewing Equipment and Process—Olympia Brewing Co., Olympia, Wash. No. 2,847,309.

Corn Sheller Employing Feed Hopper, Pneumatic Cleaner, Cob and Husk Discharge—C. O. Bartlett & Snow Co., Cleveland. No. 2,849,004.

Continuous Can Retort With Automatic Cycling Controls—W. W. M. E. Crickett, Ponce, Puerto Rico. No. 2,849,944.

Cream-Whipping Unit Adapted for Simultaneous Agitation and Gas Injection of Partially-Filled Containers—LeMay Machine Co., LeMay, Mo. No. 2,850,046.

Walnut Huller Employing Horizontal Cylindrical Cage of Spaced Rods, Beater With Resilient Members—J. M. Elston, Exeter, Mo. No. 2,848,027.

PACKAGING

Filler for Dry Cheese Curd Employing Feed Hopper With Spiral Conveyor, Movable Gate, Parallel Prongs—National Dairy Products Corp., N.Y.C. No. 2,850,047.

Frozen-Food Package Consisting of Open-Top Foil Box, Perforated Shell for Product to be Heated, Water Chamber Below, Cover With Partially Perforated Vent Holes—G. G. Gunsberg, Huntington Woods, Mich. No. 2,850,392.

Tell-Tale Device for Thawing of Refrigerated Packages Comprising Water-Absorbent Base With pH Indicator—Aseptic Thermo Indicator Co., N. Hollywood, Calif. No. 2,850,393.

Want more information on any of these recent patents—if so, you may obtain detailed printed copies by writing direct to the U. S. Patent Office, Washington, D. C., giving serial numbers of those you want and enclosing 25¢ for each copy.

NEW...
LOW COST TWO LINE FILLER
HOPE
TYPE 15 RF 2
• Simple adjustment for different height containers (no changing of nozzles)
• Rising table "bottom up fill"
• Diagonal filling saves space, easier handling
• "No container-no fill," each line
• Accurate positioning
• Micrometer quantity adjustment
• 15 to 30 cycles speed range
• For liquid, viscous or semi-viscous products
• Lowest priced 2 line filler
Write for details
HOPE MACHINE COMPANY
9400-40 STATE ROAD • PHILA. 14, PA.

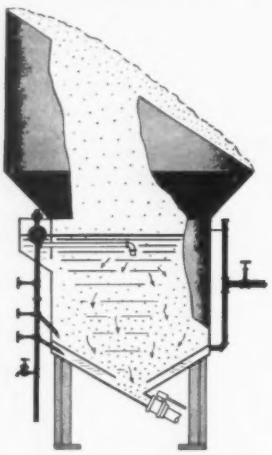
For more data, circle 353 on Reader Service Card

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

Fully Saturated Brine When You Want It, Where You Want It—Automatically

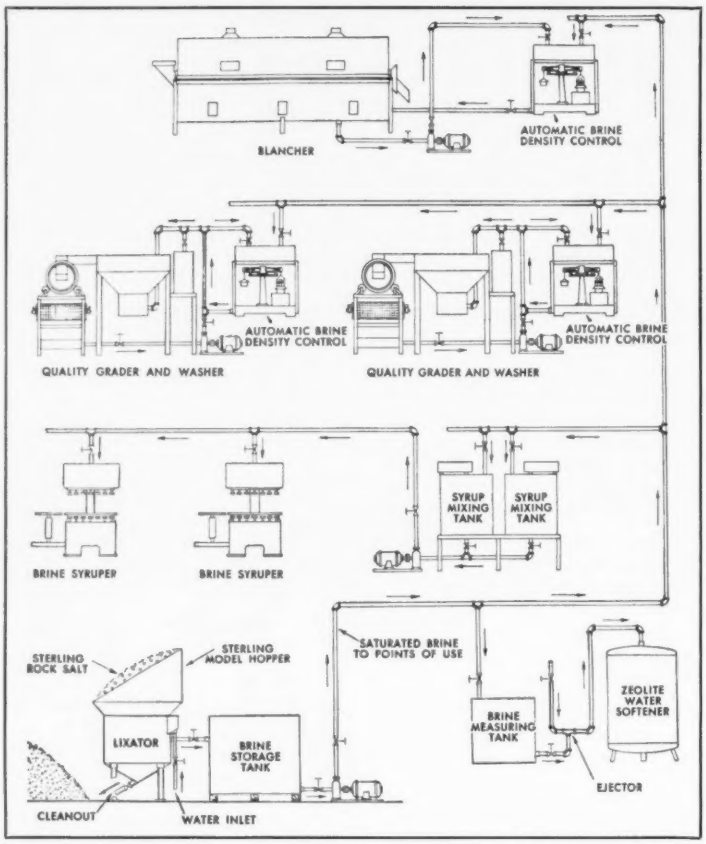
Today, this is possible in any plant with a Sterling Lixator and a brine piping system. Just open a valve at any point where you want clear, fully saturated brine. You'll get it instantly. And the exact amount you draw off will be replaced—automatically—by the Sterling Lixator. Handling of dry salt within the plant is eliminated. Salt delivery and salt storage are simplified. The entire brine making and brine distributing operation is centralized and streamlined. Diagram at right shows how this works.



This is the Sterling Model Lixator, today's most widely used rock salt dissolver. In the Lixator, rock salt is dissolved automatically, and brine is self-filtered for maximum purity and clarity.

The Lixator can be located at a point most convenient for salt delivery. Wherever brine is needed in the plant, *pipes* get it there quickly and economically. There's no expense for moving dry salt around. Important plant operations aren't disrupted, either.

In addition to the Sterling Model Lixator, International Salt Company supplies designs for the larger Sterling *Storage* Lixator and the space-saving Sterling *Silo* Lixator, which can be located outside plant buildings. For information on how your plant can save money with one of the Sterling Lixators, contact the nearest International Salt Company sales office. Or write to us direct. You can also get a free copy of "Brine for Today's Industry"—which fully describes the Lixate Process.



FLOW DIAGRAM illustrates the important, multiple uses of Lixate Brine in food processing. The high purity of Lixate Brine makes it ideal for washing and preserving fruits, vegetables and fish before they are packed and during their preparation. Its known density (*always* 100% saturated) makes Lixate Brine perfect for quality grading of peas, lima beans, grains and nuts by gravity "flotation." Lixate Brine is also used extensively in salt/sugar syrups, and for water-softener regeneration.

International Salt Company, Inc., Scranton 2, Pa. • Sales Offices:

Atlanta, Ga.	Chicago, Ill.	Memphis, Tenn.	Philadelphia, Pa.
Baltimore, Md.	Cincinnati, O.	Newark, N. J.	Pittsburgh, Pa.
Boston, Mass.	Cleveland, O.	New Orleans, La.	Richmond, Va.
Buffalo, N. Y.	Detroit, Mich.	New York, N. Y.	St. Louis, Mo.

Service and research are the extras in

STERLING SALT

INTERNATIONAL SALT COMPANY, INC.

For more data, circle 354 on Reader Service Card

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Packing station at Land O'Lakes Creameries, Inc., Thief River Falls, Minnesota.

HOERNER DESIGNED CONTAINER

*"Doubles in Brass". . . Saves Time, Cuts Costs**

When Land O'Lakes Creameries, Inc. changed to a liquid freezing process on their fine Oven Ready Turkeys, a special container was needed that "Doubled in Brass" . . . held turkeys for final freezing and served as a shipping container.

Enter a Hoerner Packaging Engineer working right in the Thief River Falls, Minn. plant of Land O'Lakes to solve the problem. His recommendations and designs resulted not only in a double-duty container but eliminated two handling steps with a resultant saving in time and money.

Prior to using the liquid freeze process, Land O'Lakes froze turkeys by blast freezing. Birds were bagged, placed individually on freezing racks, fork-lifted into blast freezers. Once frozen, they were boxed and shipped.

In the liquid freeze process birds moved from the bagging operation directly to liquid freezing tanks which serve to set the natural color of the bird but do not completely freeze the bird. From the tanks the birds are put in holding freezers to complete the freezing operation.

The Hoerner Packaging Engineer designed a container with two inch diameter offset holes, die-cut in sides and top and bottom of box. The holes are aligned when the bottom is placed in the inverted top, allowing for circulation of sub zero air. Thus it becomes a double-strength carton to hold birds for final freezing. When ready for shipment, the covers are reversed, ergo, the holes are not aligned, the container is completely closed for shipping. Truly a packaging job that doubles in brass.

The costly freezing rack operation with its handling and rehandling of turkeys was eliminated. Obviously, the elimination of these two steps resulted in time and cost savings to Land O'Lakes.

HOW A HOERNER PACKAGING ENGINEER CAN HELP YOU

If you package things, call the Hoerner plant nearest you. A Packaging Engineer will study your operation without obligation. He can increase your profit margin by reducing labor and material costs and shipping losses. All through improved packaging with corrugated. Call today.

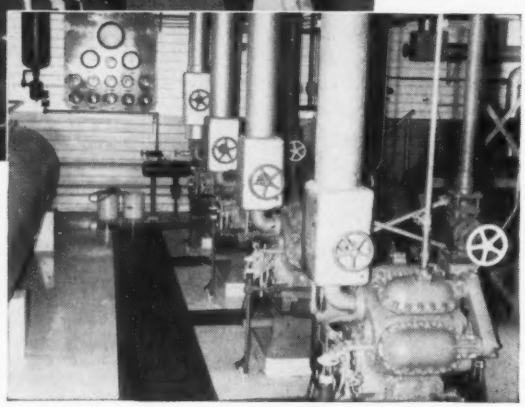
**Packaging Engineer responsible:*
Ed Thorson, Minneapolis Plant

HOERNER BOXES, INC.

Corrugated Specialists for Mid-America

GENERAL OFFICES— *600 Morgan St., Keokuk, Iowa* • **PLANTS**— *Keokuk, Des Moines and Ottumwa, Iowa Sand Springs, Oklahoma* • *Minneapolis, Minnesota* • *Fort Worth, Texas* • *Sioux Falls, South Dakota Fort Smith and Little Rock, Ark.* • *Affiliate—Cajas y Empaques Impermeables, S. A., Mexico City D.F., Mexico*

Look Inside THE WORLD'S LARGEST GRAPE STORAGE WAREHOUSE FOR YORK REFRIGERATION EFFICIENCY



Four 60 hp York VW Compressors precision-cool Elmco's huge grape storage warehouse. 78,000 feet of 1¼ inch steel coils circulate coolant to protect grapes waiting shipment.

Five grape storage rooms, totalling more than 780,000 cubic feet, are York-refrigerated at the Elmco Cold Storage Company, Porterville, Calif.

Elmco...just as other food storage plants and processors have...chose York Refrigeration for installation economy, operating economy, and the product engineering that gives York equipment a longer life with fewer maintenance problems.

So be right...right from the first...and ask your consulting engineer to check the facts about YORK refrigeration systems. They're tailored installations that cost no more. And full details are available simply by writing to York Corporation, York, Pa.

YORK

YORK CORP. SUBSIDIARY OF BORG-WARNER CORP.

BW

BORG-WARNER
RESEARCH & ENGINEERING
MAKE IT BETTER

Air Conditioning, Heating, Refrigeration and Ice Making Equipment • Products for Home, Commercial and Industrial Installations

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(Classified Advertising)

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$1.80 A LINE, MINIMUM 3 LINES. To figure advance payment count 5 average words as a line.

Positions Wanted advertising rate is ½ of above rate payable in advance.

Box Numbers—Count as one additional line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

The advertising rate is $16.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

Employment Opportunities—$37.00 per inch subject to agency commission.

An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches—to a page.

Individual Spaces with border rules for prominent display of advertisements.

Send NEW Ads & Inquiries to Classified Adv. Div. of Food Engineering, P. O. Box 12 for March issue closing February 20th

ASSISTANT SALES MANAGER

We are seeking a man with broad experience in industrial sales and sales administration, preferably in the food or pharmaceutical industries, with college degree in chemistry, chemical engineering or food technology.

Position is with a technical division of national food manufacturing company. Division headquarters are located in New England. Company provides an excellent program of insurance, retirement, and related benefits. This is an opportunity to join an expanding division with excellent growth potential for the person selected.

All replies will be treated with the strictest confidence. Write to:

P-9883, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Research Director

Excellent opportunity for promotionally minded Research Director for progressive So. Calif. Food Products Co. Must have strong food tech. training and experience. Must be able to relate scientific findings to Sales and effectively administrate own personnel in new, well-equipped laboratory. Creative ability in new products essential. Send resume including photo and salary requirements to

P-9633 Food Engineering
68 Post St., San Francisco 4, Calif.

FOOD TECHNOLOGISTS (B.S. - M.S.)

(CANDY AND DAIRY)

Opportunities are open for two men with 5 to 10 years experience respectively in the manufacture of candy and ice cream and related products. These challenging positions are in an expanding Technical Sales Service Department. After a brief training period, service contacts with customers will require approximately half of your time; the remainder will be spent in our food technology laboratories at Clinton.

Excellent employee benefits and working conditions. Send resume with full details of education, experience and salary requirements to:

DIRECTOR, TECHNICAL SALES SERVICE DEPARTMENT
CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

FOOD TECHNOLOGIST

with research or production experience in the meat or poultry industry for international food manufacturing company. Our staff advised of this ad. Send resume.

P-9833, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Wanted—Man with experience in pickle production processing and sweetening to work in modern pickle plant located in middle west. Give all pertinent information when answering. P-9327, Food Engineering.

Mature bakery wrapping supervisor with wide familiarity in high-speed bread and roll packaging is sought by growing independent Mid-West bakery. Applicants need considerable mechanical know-how and unusual ability to organize, direct, and inspire others. Responsibility for at least 3 AMF bread lines, 2 AMF and National roll lines, and conveyorized loading. General production management training and advancement available. Salary: $6,500-up, plus profit-sharing. Send letter of training, work experience, and career objectives to Stephen West, West Baking Company, 1331 E. Washington, Indianapolis, Indiana.

Quality Control Supervisor wanted, Mid-western plant manufacturing flour mixes: training and experience in cereal chemistry or food technology required: knowledge baking technology and statistical methods desirable. Full responsibility for material, process, finished product testing. Salary commensurate with experience. State requirement. P-9717, Food Engineering.

Project Engineer for Leading Food Equip-ment Manufacturer. Engineering degree required. Prefer 5 or more years experience in designing food machinery. Ability to expand on basic machinery concepts. Must have imagination. Wonderful opportunity for right man to connect with very fast growing company. Write full details only if qualified to Engineering Dept., Gordon Johnson Co., 2519 Madison Ave., Kansas City, Mo.

Production man with background in mixes and bakery specialties. Required by highly rated bakery supply house in sunny South. Send resume with reply to P-9653, Food Engineering.

EMPLOYMENT SERVICE

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—Jira Thayer Jennings, P. O. Box 674, Manchester, Vt.

POSITIONS WANTED

Food Technologist—Chemist Scandinavian imigrant, 13 years comprehensive experience in candy, chocolate, confectionary and food. Quality control, product development, production and managing. Desires position, available about May. PW-9860, Food Engineering.

Food Technologist-Horticulturist. Quality control and agricultural research background. 15 years experience in baby food, preserves, citrus juice, general canning, government inspection. Age 38, married, family. PW-9856, Food Engineering.

Production Manager-Technical Director. B.S. Degree, eleven years experience in Foods. Salad products, shortening, margarine, vegetable oil processing. PW-9849, Food Engineering.

QUALITY CONTROL MANAGER
Can Manufacturing

New can manufacturing division of National Food Packer has a high level management spot open for man to head-up nation-wide quality control organization. Must have supervisory experience in quality control end of can manufacturing industry.

Send a complete resume of education, experience and salary requirement in first reply. All replies will be held in strict confidence. Resumes returned on request.

P-9638—Food Engineering
520 N. Michigan Ave., Chicago 11, Ill

WANTED MANUFACTURERS REPRESENTATIVE

now calling on industrial trade and O.E.M. accounts

RW-9740, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

POSITIONS WANTED

Chemical Engineer—Food Technologist. Eight years experience in supervision of production, process control, quality control, research and development. Thoroughly experienced in production of soluble coffee, soluble tea and other food products. Detailed knowledge of spray drying techniques, freezing tunnels, solid-liquid extraction, liquid and powder filling, plant engineering. Desire challenging position with dynamic organization. PW-9767, Food Engineering.

Manufacturing Executive, technically trained, 20 years in Quality Control, Product Development, Packaging, and Production Management. Broad experience general manufacturing, bakery and potato chips. Extensive Supermarket background. Presently employed as plant manager, relocate personal reasons. PW-9725, Food Engineering.

SELLING OPPORTUNITY WANTED

Young Manufacturers' Agent Seeks Food Ma-terial Handling Or Food Processing Lines. Territory—New England. Eight years calling on Bakeries, Food Processing and Beverage plants. RA-9704, Food Engineering.

BUSINESS OPPORTUNITY

For lease or sale. Former ice cream plant on main highway, 7000 sq. ft. on one floor. Built in 1949. Two freezer rooms, 65 tons of refrigeration. Good for food distribution or processing plant. Sweetlands; 2702 Fenton Rd., Flint 7, Michigan.

DON'T FORGET THE BOX NUMBER

Wanted—Sectional GLASS LINED TANKS

Contact
R. J. BODDINGTON
7 - 37th Ave. Long Island City, N. Y.
ST. 6-2600

WANTED AT ONCE

100 h.p. Scotch boiler; 1 ton ribbon blender steam jacketed; Burt simplex filler, model T or F210.

Efco Products Inc.
136 Smith St., Poughkeepsie, N. Y.

FIRST CLASS EQUIPMENT FROM YOUR FIRST SOURCE

SAVE ON PROCESSING and PACKAGING

EXCEPTIONAL FEATURES

Langsenkamp Colossal Pulper or Finisher No. 1618 in Monel.
American Utensil Model B Juice Extractor complete.
Struthers Well Stainless Drum Dryer; 5' x 4' complete.
Bagley & Sewell Double Drum Dryer size 28" x 60" complete.
Canco Aut. Closer for No. 10's

CUTTERS—DICERS—PEELERS

Rotary Cutters all sizes by Abbe, Whitin, Ball & Jewell. Dicers by Sterling, Urschel, Peelers by Sterling, Blakeslee

Patterson-Kelley Stainless Horizontal Percolator.
300 gal. Pfaudler 6' Glass Lined Jktd. Evaporating Dishes (ASME).
2 Stainless Jacketed Kettles; 200 gal. Cap. with Agitators.

Standard Knapp Aut. T. & B. Case Sealers No. 429.
Burt Caser for 303 Cans.
Standard Knapp Automatic Can Packer for quarts.
Johnson Automatic Wrapper and Sealer for Frozen Foods.

FILLERS; For Liquids, Semi Liquids, Pastes, Powders, Crystals, etc. Karl Kiefer, Stokes & Smith, Triangle Food Machinery Co., Filler Machinery Co. and other standard makes for all filling purposes; Semi and Fully Automatic models.

FILTERS; All types including Filter Presses Disc Filters, Pressure Filters, Send for complete list.

LABELERS; Semi and Fully Automatic Units by World, Ermold, New Jersey, Pneumatic Scale and others; Please submit labeling problem for exact recommendations.

MIXERS; NEW Falcon Ribbon Mixers in Steel or Stainless Steel, all sizes; Portable Agitators, Mixing Tanks; Heavy Duty Dough and Mass Mixers, Double Arm, Jacketed or Unjacketed. See complete List of Availables.

KETTLES, TANKS, VACUUM PANS, REACTORS; in Stainless, Steel, Copper, Nickel, Monel and Iron; send for complete list of our large stock.

EVAPORATORS, STILLS, COLUMNS by Buffalo, Swenson, Blaw Knox, Zaremba and others in all wanted metals.

Send for New Issue "First Facts"

FIRST MACHINERY CORP.
211 Tenth Street, Brooklyn 15, N. Y.

WIRE US COLLECT!

- **A T & M 42" Centrifuge,** S.S. perf. basket. 25 HP, 1200 RPM
- **Jeffrey S.S. Vib. Tubular Conveyor,** 6" ID x 12'7½" long
- **Walking-Beam Cooler,** Canco 6' wide x 30' long
- **Proctor-Schwartz 8' x 60' dryer** S.S. Apron type.
- **Creamery-Package S.S. Exchanger** plate type, 100 plates
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- **Groen Model RA-60 Gallon Kettles,** S.S. with agitators (2)
- **Standard-Knapp Labeler,** heavy duty, quick adj. 8 oz.-gallons
- **Moyno 3 x 2½ Pump,** Mod. 1 SSR, with 5 HP motor, remote controls
- **Package Machinery Wrapper,** Mod. FAQ with electric eye.

For immediate quote, wire or phone collect—GA 1-1380

ME MACHINERY AND EQUIPMENT COMPANY
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AARON EQUIPMENT IS MOVING PRICES REDUCED TO CUT MOVING COSTS

Areco Stainless Steel Ribbon Mixers—200 lbs. to 2000 lbs. cap.
2—Stokes and Smith Auger Fillers, Model G1 with vacuum heads, complete with motor and vacuum pumps.
Ceco Model 3901, side sealer with compression unit.
Stokes double roll dryer, 4' x 9' rolls with motor.
Sparkler filter, Mod. 3326R, rubber lined, nickel contact parts.
Groen 40 to 200 gallon s/s kettles in stock.
Groen 20 gallon gas fired s/s kettle, like new.
Fitzpatrick Comminuting machines, 3 H.P. & 7½ H.P.
Readco 100 gallon double sigma blade mixer.
J. H. Day 75 gallon double sigma blade mixer.
W. & P. 200 gallon double sigma blade mixer.
2—Ribbon mixers, 2' x 8' long bowls with motors and reducers. Good condition.
Stainless steel tanks, 25 gallon to 1500 gallon, jacketed and unjacketed. Some with agitators.

Send for our complete listings

Moving to:
9370 Byron St., Schiller Park, Ill.
After March 1, 1959

AARON EQUIPMENT CO. Div. of ARECO, INC.
1849 S. Blue Island Ave. Chicago 8, Ill.

FILLER & CHECKWEIGHER

1—Model HG-84, Serial 8482, two station auger vac Stokes & Smith filler used for filling 1# round canisters 3¾" dia. at rate of 60 per minute, complete with single inlet conveyor, stainless steel hopper, double outlet conveyor, auger vac attachment consisting of motor driven vacuum pump, vacuum tank, filter and set of auger vac filling heads. Wired for 220/3/60.

1—Model F52 Hi-Speed Checkweigher used for checkweighing 1# round canisters 3¾" in dia. at rate of 60 per minute complete with infeed belt and 3 discharge belts for overweight, underweight and correct weight packages. Checkweigher operates on 110 volt, 60 cycle and the conveyors at 220/3/60.

FS-9733 Food Engineering
520 N. Michigan Ave., Chicago 11, Ill.

BOILERS

HI-PRESSURE
Complete stock from 10-2,000 h.p.
Nation's largest inventory, New & Used
WABASH POWER EQUIPMENT
9750 Skokie Blvd., Chicago (Skokie), Ill., OR 3-8118

FOR SALE:
In good running condition.
Buffalo chopper; Burt can labeler; Artofex dough mixer; 110 qt. Champion cake mixer; Dutchess divider and rounder. Efco Products Inc., 136 Smith St., Poughkeepsie, N. Y.

FOR SALE:

CLOSING MACHINE

One Continental Can Company #334 CR Closing Machine #1472 complete with 303 x 406 atmosphere change parts, CR belt packing device #334, CR single auxiliary disc and CR 6-pocket M&S Filler Drive. New in 1952. Has had 18 months actual operation; direct motor drive, short take-away conveyor, will handle 160 cans per minute without material waste. Priced right for quick sale!

OTTO W. CUYLER CORPORATION
Webster, N. Y.

FOR SALE
Battle Creek Model 51-3
WRAPPING MACHINE
A1 Condition, 160 packages per minute. Electric Eye, Automatic Lubrication System. Present package size 4 x 5¼ x 1¾. Price $3700.00.
ANTRIM EQUIPMENT CO.
P. O. Box 217 Greencastle, Penna

FOR SALE
Complete 12 ounce
CANNING LINE
PURE FOODS CORP.
16907 So. Normandie Ave., Gardena, Calif.

Modern Packaging Equipment

SPECIAL OFFERINGS
PNEUMATIC SCALE COMPANY High Speed fully automatic Cartoning Line.
PNEUMATIC SCALE COMPANY Medium Speed fully automatic Cartoning Line.
Both Lines in 11,000 Series.

KARL KIEFER 24 Spout Stainless Steel Rotary Vacuum Filler synchronized to Karl Kiefer Bottoms-up Rotary Bottle Cleaner with Wormfeed.

BATTLE CREEK, Model #46, Wrapping Machine equipped with Oliver heat seal label attachment.

PACKAGE MACHINERY CO. Model FF Wrappers with electric eye. Practically new.

STOKES & SMITH Model D Neverstop.

FERGUSON fully automatic Cartoning Line.

STANDARD KNAPP & PACKOMATIC Top & Bottom case sealers.

PNEUMATIC SCALE COMPANY Double Package maker and ROTARY Top Closures.

PNEUMATIC SCALE COMPANY High Speed Bottling Line, consisting of: Bottle Cleaner, 20 Spout Vacuum Filler, 4 head Capper and Duplex Labeler, 12,000 series. May be purchased as a complete line or individually.

STOKESWRAP and TRANSWRAP, Models A and B.

PACKAGE MACHINERY, SCANDIA & HAYSSEN Wrappers with and without Electric Eye.

STOKES & SMITH and TRIANGLE Auger Fillers.

RESINA, CAPEM and PNEUMATIC 1, 3 and 4 Head Cappers.

Partial List—send for complete list of equipment in stock.

TOP PRICES FOR SURPLUS PACKAGING EQUIPMENT.

ALLIED EQUIPMENT CO.
940-946 Nepperhan Ave., Yonkers 3, N. Y.
Phone: Yonkers 5-0442

FOR SALE
1 Continental #10 PDS Closing Machine
1 Continental CR-P4 Closing Machine
1 American 400 Closing Machine
1 Continental CR-P7 Closing Machine
1 Kyler Caser for 300 x 407 Cans
1 RP 21 S.S. Plaudler Piston Filler
1 Standard Knapp Labeler thru #10 cans
1 Robins Roto Screw Lye Peeler #1

ALARD INDUSTRIES, INC.
P. O. Box 367 Williamson, N. Y.

FOR SALE

1—Niagara #510-28 vert. pressure-leaf filter, 500 sq. ft. T316 ss.
1—Niagara #36H-110-3, horiz. filter, 100 sq. ft., T304 ss.
1—Niagara #80-30, vert., 76.8 sq. ft. T304 ss. jktd.
1—Niagara #45-30, vert., 45 sq. ft., T304 ss leaves, steel tank
1—Sparkler #33S-28 filter, T304 ss.
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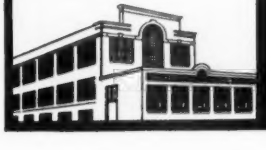

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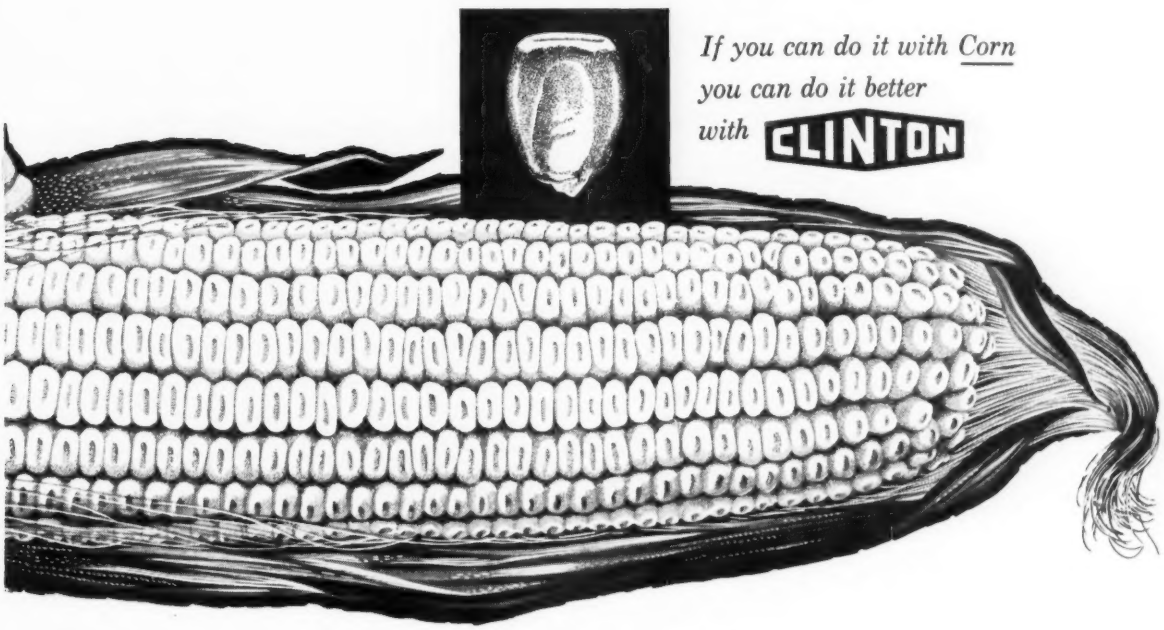

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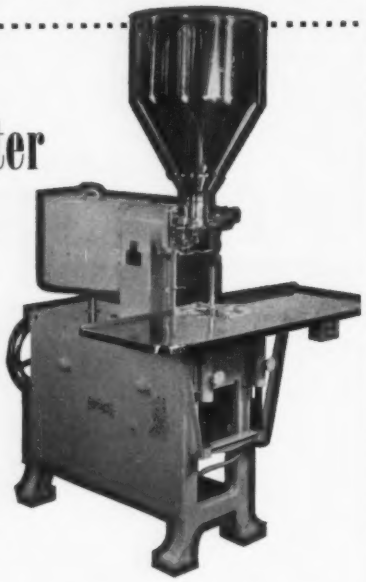

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